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An Appreciation
OF
HARVEY AS ANATOMIST.

Prepared for the Harvey Tercentenary Celebration

BY SIR ARTHUR KEITH, M.D. ABERD., F.R.S.,
PRESIDENT, BRITISH ASSOCIATION; CONSERVATOR OF MUSEUM AND HUNTERIAN PROFESSOR, ROYAL COLLEGE OF SURGEONS OF ENGLAND.

To understand how any given masterpiece of art has come into existence we must have access to the studies, sketches, and ideas which preceded its execution. It is also so in the case of great inventions; it is not the finished mechanism which interests the student of discovery, but the crude first attempts and the imperfect models of the inventor. It is also so in the world of biological discovery; Harvey's masterpiece "De Motu Cordis," is the most perfect thing in the annals of biological discovery, but it is only the completed picture we have—the one which he gave to the world—after he had laboured on it for a quarter of a century. Nowhere, unfortunately, does he tell us what set him off on his quest, nor the order of events which convinced him that he was right and all the rest of the world wrong. We may be certain, I think, that his inspiration and his first clues came to him as he learned to use scalpel, forceps, and probe in the pursuit of anatomy.

WILLIAM HARVEY.
From the portrait belonging to the Royal College of Physicians of London.

When Harvey was studying in Padua, his master, "the celebrated Hieronymus Fabricius of Aquapendente, a most skilful anatomist and venerable old man," was preparing his monograph on the valves of the veins (published in 1603), and his pupils must have had their attention concentrated on these mechanical contrivances. A keen student is always attracted to subjects investigated by his teacher. Fabricius taught, as was accepted by all of his day, that the blood in the veins flowed outwards from the heart to the periphery and that valves had been set in the walls of veins to regulate the distribution of blood to dependent parts. Now, we see that at every point of his final argument Harvey accepts the dictum of Galen—as all anatomists must still do—that Nature is the perfect contriver. "For Nature always does that which is best." Harvey says in one passage; "Nature does nothing in vain" he writes in another; "Nature ever perfect and divine" in a third. "But is not the thing rather arranged as it is by the consummate providence of Nature?" is a question he puts to his reader. If Harvey thought thus he must have perceived that, in setting valves in the veins, with their catching edges directed towards the heart, either Nature had blundered or his teacher Fabricius had misread Nature's design. Often the young inquirer makes a flaw in his teacher's argument the point of departure for his own research, and it is probable that this was the case with Harvey. The first clue that put him on the track of his great discovery was probably his search for an explanation of those minor structures—the valves of veins. How soon he took to examining the action of valves as revealed in the distended veins of the living arm and that in life they prevented any kind of reflux, we cannot say. In this, as in all other instances, he never failed to put anatomical conjecture to the test of physiological proof. Herein we see that Harvey was that very rare kind of man—the perfect anatomist.

Long before he left Padua it must have dawned on Harvey that all was not well with the doctrine which the leading anatomist of the day taught his pupils concerning the uses of the heart and of its great vessels. If "Nature had made nothing in vain," why had such a useless structure as the right ventricle, "an apparatus of fibres, braces, and valves," been added to the heart? Why should there be placed within the heart and in the pulmonary artery and aorta contrivances which were as perfect in their mechanical action as the "clacks of a water bellows"? If the heart was, as Fabricius taught, merely a vat in which blood was concocted and vital spirits brewed, such structures were purposeless. And why should the lung require such an enormous blood-supply? Fabricius could explain none of these things and the first duty of an anatomist is to explain.

At several points of his argument Harvey makes statements which suggest that there was another and weightier reason which caused him to be dissatisfied with what Fabricius taught concerning the action of the heart. In Chapter V., and again in Chapter VI., he states that "the grand cause of doubt and error in this subject (the circulation of the blood) appears to me to have been the intimate connexion between heart and lungs." One may infer from this statement that the first real step in Harvey's discovery was a realisation of what was the exact nature of the relationship which existed between heart and lungs.

The way had been prepared for him by Servetus and Columbus; both held the heretical opinion that there were passages in the lungs by which blood passed from the right ventricle to the left. In this matter Fabricius was orthodox. He taught Harvey that the pulmonary artery supplied the lungs with nourishment and that the pulmonary veins served as pipes or passages—first, for the conveyance of air from the lungs to the left ventricle; and, secondly, for the return of fuliginous vapours from the left ventricle to the lungs. The mitral valve, Fabricius held, was designed to prevent the regurgitation of air once it had entered the left ventricle. "Good God," demanded Harvey, "how should the mitral valve prevent the regurgitation of air and not of blood?" And why, if the pulmonary veins were for the conveyance of air had they not the rigid walls of the windpipe? And why should they be filled with blood at death when they were charged with air in life? And why was it, when lungs were inflated in a living dog or in a dead man, that air never passed into the pulmonary veins and left ventricle? Fabricius could explain none of these things. Harvey could explain all if he were allowed to presume that there were "pores" in the lung by which blood could pass from pulmonary artery to pulmonary vein. Such an assumption he claimed to be legitimate, for did not everyone allow that blood percolated through liver and kidneys? If blood could pass through the dense substances of these organs why, asked Harvey, cannot it not find its way through the porous texture of the lungs?

Study of the Living Heart in Action.

All the men who taught Harvey agreed that the blood was formed in the liver, and that somehow it was conveyed from the right side of the heart to the left. The accepted opinion was that it passed by "secret pores" through the interventricular septum. "But, by Hercules!" exclaims Harvey, "no such pores can be demonstrated, nor in fact do any such exist. For the septum of the heart is of a denser and more compact structure than any portion of the body, except the bones and sinews." Harvey here again appeals to his argument from Nature. He points out that in the fœtus, where the lungs are silent in function, Nature has opened a passage whereby blood can pass direct from the right side of the heart to the left; if she had intended that blood should pass from right to left side of the heart, not through the lungs, but direct from ventricle to ventricle, she would certainly have provided an ample and unmistakable passage.

Anatomical conjecture can only give a clue to function; it can never provide the final and convincing proof. At what point of his inquiry Harvey discovered that the heart was a pump—a double pump, the right ventricle attached to the lungs and the left to the rest of the body, we do not know, but it is certain he could never have made this discovery unless he had studied the heart in action within the living body. Harvey's mode of thinking was his own but his methods of inquiry he owed to Fabricius. It was from his master that he learned to resort to embryology, to comparative physiology, and to vivisection when in search of evidence needed for the elucidation of all the problems of structure. It was to Fabricius he owed his faith in comparative physiology. What was found to be true of higher animals was certain to be directly applicable to the case of man. For Harvey, blood and spirit were one and inseparable; so were anatomy and physiology. He found the heart a mass of anatomical incongruities; by making physiology the handmaid of anatomy he was able to leave it a perfectly explained organ. Anatomy provided him with suggestions; physiology furnished him with the proofs.

Rescue of Medicine from the Demonology of Myth.

There is nothing more difficult for us moderns than to feel a pulse with the finger of a pre-Harveian physician. Under his finger the artery expanded of itself, drawing in blood, spirits, air and vapours of all sorts and squeezing them out again as it contracted. We feel only Harvey's stroke of the heart—the arteries distending as "when a bladder is filled." We see the patient's body as a great capillary field, uniting arteries and veins—a field of whose existence Harvey knew nothing save by inference. We think in terms of oxygen, carbon dioxide, and combustion; even Harvey had to content himself with "vital spirits," "fuliginous vapours," and "innate heat." To the pre-Harveian physician the human body was a realm dominated by a cosmogony of spirits; Harvey's greatest service to medicine was not the discovery of the circulation, but his rescue of medicine from the demonology of myth. As his method of inquiry came into fashion spirits became more and more obsolete and less and less used by anatomists for the purpose of explanation. The spirit myth has now departed from most parts of the human body, save the brain, where it still lingers.

Even Harvey himself was clearly staggered by one aspect of his discovery. When he had measured the capacity of the left ventricle and calculated its output, the amount seemed to him unnecessarily great. He found that in half an hour, with the heart beating 70 to the minute and only throwing out half an ounce at each stroke, that more than eight gallons of blood would have circled round the body. If blood was merely for the nourishment of tissues why was so much needed? Harvey supposed that so rapid circulation was needed to keep tissues supplied with heat and vital spirits, and that the blood would congeal and thicken if not kept in active movement. More than a century after Harvey's death vital spirits were replaced by oxygen.

Harvey and Darwin.

There is a very remarkable parallel between the discoveries of Harvey and of Darwin—although the two men represent very different physical types of Englishmen. Both put forward a hypothesis to explain an enormous number of biological facts—the one to prove the truth of the circulation, the other to prove the truth of evolution. Before Harvey other men had thought of circulation of the blood, and before Darwin there had been many evolutionists. But whereas the efforts of their predecessors had been tentative and not fully convincing, so overwhelming was the proof they brought forward in support of their contentions that the resistance of men's minds was overborn and what had been heterodox became suddenly orthodox. Both Harvey and Darwin began by conjecture and ended by a resorting to experimental proof. In both cases a large presumption had to be made; Harvey had to presume that passages existed between arteries and veins throughout the body; Darwin had to presume that there was a biological process by which the specific characters of any kind of living thing could be altered so that a new species was produced. Such presumptions had to be made by both men; only by making them could all the facts be explained. Within three years Malpighi saw through his microscope the passages which Harvey had seen only by the eye of faith; but although Darwin has been dead these 44 years, his Malpighi has not yet made his appearance. Some day he, too, will arrive.

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The health insurance system has been of value in adding to our information as to the extent of the prevalence of rheumatism. In 1921 an investigation was made consisting of an examination of a section of the records of 226 insurance practitioners having between them some 400,000 insured persons on their lists, with a view to ascertaining the relative frequency with which insured persons consult their doctors for a number of illnesses, classified in broad groups. In a list of 15 "diseases" causing insured persons to consult their doctors rheumatic complaints came third in order, the number of cases per 1000 illnesses of the most common diseases being: bronchitis, &c., 213; digestive system, 131; rheumatism, lumbago, &c., 88.

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Of most value in relation to the subject now under discussion, however, is the report of the Ministry's Committee on the Incidence of Rheumatic Diseases published in 1924. This report is based upon a detailed examination of the illnesses of a rheumatic character during 1922 among all insured persons on the carefully recorded lists of 49 insurance practitioners. The number of insured persons on such lists was approximately 58,000 males and 33,000 females—i.e., 91,000 in all. The number of rheumatic cases among the illnesses recorded in the year was 2510, of which 1771 related to males and 739 to females. With the aid of the material derived from this small but valuable sample the Committee estimated, broadly, the proportion of sickness due to rheumatism among the insured population and the cost of this sickness in health insurance benefit. Having regard to the fact that the insured population numbers over 15,000,000 persons and includes practically all the wage-earning classes between the ages of 16 and 65 (until this year between 16 and 70), it may be said to approximate closely to the mass of industrial workers of the country. Accordingly I propose to estimate the cost to the country of industrial rheumatism by applying the conclusions of the Committee to the most recent sickness experience of insured persons in Great Britain which is available—viz., that for 1927. It must be kept in mind, however, that the figures which I shall presently give relate only to the insured wage-earners. It is to be regretted that they do not cover the invalidity of wives or non-wage-earning dependents of insured persons, nor that of men and women over the age of 70.

It must be remembered that the Committee's estimate of the amount of invalidity due to rheumatism must be accepted with one important reservation. With the object, quite properly, of excluding any sickness as to the origin of which there was any element of doubt, the Committee, unless arthritic or fibrositic symptoms were present, took no account of chronic heart disease, of which it is estimated that at least one-half is rheumatic in origin. We are told in the Ministry's recent report on Acute Rheumatism in Children, published in May, 1927, that probably not less than 40 per cent. of all deaths from heart disease have their origin in acute rheumatism and two-thirds of the acute rheumatic infections which ultimately cause those deaths are contracted in the period of childhood, 5 to 15 years. The Committee, being concerned with the insured population (i.e., at that time persons between 16 and 70), would have no cognizance of cases diagnosed in the period under review as "heart affections," and thus some portion of the total invalidity due primarily to rheumatism has doubtless escaped observation.

Rheumatic Diseases in Various Age-groups.

Some idea of the extent to which the factor of age enters into the question of rheumatism can be obtained from the following comparison in the Committee's report of sickness per annum due to all rheumatic diseases per 100 insured persons in each age-group (Table I.).

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55 to 64	457	1026
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The division of these figures into three broad disease-groups (Table II.) is still more illuminating.

TABLE II.

Group A.—Acute and subacute rheumatism.
" B.—Non-articular rheumatism.
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Age-group.	Days of sickness per annum per 100 insured persons in each age-group. All rheumatic diseases.					
	Males.			Females.		
	A	B	C	A	B	C
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35 to 44	24	32	39	24	51	49
45 to 54	34	74	135	57	107	226
55 to 64	22	148	287	71	252	703
65 and over	51	593	1363	139	790	2261

It is to be noted that the amount of sickness due to acute and subacute rheumatism (Group A), while being comparatively heavy at the youngest ages, and costing the insurance funds a large sum of money because it affects the most numerous section of the industrial population, is much lighter than that due to other forms of the disease at all ages over about 40. Sickness due to non-articular rheumatism (Group B) increases quite substantially with age, while that due to chronic joint diseases (Group C) increases in a most marked manner.

TABLE III.

Group.	Men.	Women.
A. Acute and subacute rheumatism	14 per cent.	24 per cent.
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C. Chronic Diseases	54 "	53 "

The relative prevalence of the various groups of rheumatic diseases for insured persons in each sex can be seen from Table III.

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The way had been prepared for him by Servetus and Columbus; both held the heretical opinion that there were passages in the lungs by which blood passed from the right ventricle to the left. In this matter Fabricius was orthodox. He taught Harvey that the pulmonary artery supplied the lungs with nourishment and that the pulmonary veins served as pipes or passages—first, for the conveyance of air from the lungs to the left ventricle; and, secondly, for the return of fuliginous vapours from the left ventricle to the lungs. The mitral valve, Fabricius held, was designed to prevent the regurgitation of air once it had entered the left ventricle. "Good God," demanded Harvey, "how should the mitral valve prevent the regurgitation of air and not of blood?" And why, if the pulmonary veins were for the conveyance of air had they not the rigid walls of the windpipe? And why should they be filled with blood at death when they were charged with air in life? And why was it, when lungs were inflated in a living dog or in a dead man, that air never passed into the pulmonary veins and left ventricle? Fabricius could explain none of these things. Harvey could explain all if he were allowed to presume that there were "pores" in the lung by which blood could pass from pulmonary artery to pulmonary vein. Such an assumption he claimed to be legitimate, for did not everyone allow that blood percolated through liver and kidneys? If blood could pass through the dense substances of these organs why, asked Harvey, cannot it not find its way through the porous texture of the lungs?

Study of the Living Heart in Action.

All the men who taught Harvey agreed that the blood was formed in the liver, and that somehow it was conveyed from the right side of the heart to the left. The accepted opinion was that it passed by "secret pores" through the interventricular septum. "But, by Hercules!" exclaims Harvey, "no such pores can be demonstrated, nor in fact do any such exist. For the septum of the heart is of a denser and more compact structure than any portion of the body, except the bones and sinews." Harvey here again appeals to his argument from Nature. He points out that in the fœtus, where the lungs are silent in function, Nature has opened a passage whereby blood can pass direct from the right side of the heart to the left; if she had intended that blood should pass from right to left side of the heart, not through the lungs, but direct from ventricle to ventricle, she would certainly have provided an ample and unmistakable passage.

Anatomical conjecture can only give a clue to function; it can never provide the final and convincing proof. At what point of his inquiry Harvey discovered that the heart was a pump—a double pump, the right ventricle attached to the lungs and the left to the rest of the body, we do not know, but it is certain he could never have made this discovery unless he had studied the heart in action within the living body. Harvey's mode of thinking was his own but his methods of inquiry he owed to Fabricius. It was from his master that he learned to resort to embryology, to comparative physiology, and to vivisection when in search of evidence needed for the elucidation of all the problems of structure. It was to Fabricius he owed his faith in comparative physiology. What was found to be true of higher animals was certain to be directly applicable to the case of man. For Harvey, blood and spirit were one and inseparable; so were anatomy and physiology. He found the heart a mass of anatomical incongruities; by making physiology the handmaid of anatomy he was able to leave it a perfectly explained organ. Anatomy provided him with suggestions; physiology furnished him with the proofs.

Rescue of Medicine from the Demonology of Myth.

There is nothing more difficult for us moderns than to feel a pulse with the finger of a pre-Harveian physician. Under his finger the artery expanded of itself, drawing in blood, spirits, air and vapours of all sorts and squeezing them out again as it contracted. We feel only Harvey's stroke of the heart—the arteries distending as "when a bladder is filled." We see the patient's body as a great capillary field, uniting arteries and veins—a field of whose existence Harvey knew nothing save by inference. We think in terms of oxygen, carbon dioxide, and combustion; even Harvey had to content himself with "vital spirits," "fuliginous vapours," and "innate heat." To the pre-Harveian physician the human body was a realm dominated by a cosmogony of spirits; Harvey's greatest service to medicine was not the discovery of the circulation, but his rescue of medicine from the demonology of myth. As his method of inquiry came into fashion spirits became more and more obsolete and less and less used by anatomists for the purpose of explanation. The spirit myth has now departed from most parts of the human body, save the brain, where it still lingers.

Even Harvey himself was clearly staggered by one aspect of his discovery. When he had measured the capacity of the left ventricle and calculated its output, the amount seemed to him unnecessarily great. He found that in half an hour, with the heart beating 70 to the minute and only throwing out half an ounce at each stroke, that more than eight gallons of blood would have circled round the body. If blood was merely for the nourishment of tissues why was so much needed? Harvey supposed that so rapid circulation was needed to keep tissues supplied with heat and vital spirits, and that the blood would congeal and thicken if not kept in active movement. More than a century after Harvey's death vital spirits were replaced by oxygen.

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Sickness and Disablement Benefit due to Rheumatic Disease.

One of the most interesting conclusions of the Committee, and one to which I desire to direct your especial attention, is to the effect that in the year under observation approximately one-sixth of the total period for which sickness and disablement benefit was paid to men was due to rheumatic diseases. The corresponding figure for women was one-seventh. An examination of the records of certain individual approved societies produced an almost similar result. Since 1922, however, the amount of invalidity under the National Health Insurance Act has risen, the increase being more marked in the case of disablement benefit (i.e., illnesses with a duration exceeding six months) than in the case of sickness benefit (i.e., first six months of illness). It may be that, with the increase in the proportion of protracted sickness, the portion of the total attributable to rheumatism is now a little different from what it was in 1922.

Estimated Cost of Rheumatism in 1927.

It is probable, however, that these two fractions, one-sixth (men) and one-seventh (women) are still sufficiently accurate for my broad estimate of the cost of industrial rheumatism. In 1927 the total sickness and disablement benefit payments made by approved societies in England, Scotland, and Wales amounted to about £20,000,000. This represented about 34 million weeks of incapacity for which benefit was paid. If due allowance be made for incapacity occurring in the initial period of sickness, when no benefit is payable (i.e., the waiting days), it is probable that the total incapacity amounted to about 35 million weeks, the proportion due to rheumatism being about 5½ million weeks. The corresponding cost of medical services and the administration of insurance committees and approved societies in 1927 was about £14,000,000. If we allocate something over one-half of the cost of administering approved societies to the supervision of sickness and disablement benefits, and if, further, we take a fraction a little under one-sixth (to allow for women) and apply the result to both sickness and disablement we arrive at a figure of a little over £5,000,000 as the approximate disbursements made under the national health insurance scheme in Great Britain during 1927 on account of rheumatism.

If to the foregoing we add the amount of wages lost to insured persons through rheumatism on the basis of an average wage of from 50*s.* to 55*s.* per week (man) and from 25*s.* to 30*s.* per week (woman) the £5,000,000 requires to be increased by about £12,000,000, making a total of £17,000,000 in all. This vast sum then represents approximately the yearly disbursements under the national health insurance scheme to insured persons on account of rheumatism together with the accompanying loss of wages. It does not include any sum for the cost of the medical treatment of persons suffering from rheumatism who are not totally incapable of work, of the cost of nursing in bad cases, nor does it take account of the cost of any necessary institutional treatment. Further, it does not cover fully persons over the age of 70, the relative cost in respect of whom must be heavy in view of the rapid increase in the severity of the disease with age, nor does it make any allowance for dependents of insured persons, all of which, if it were possible, should be taken into account in assessing the cost of rheumatism to the country.

Conclusion.

This necessarily brief survey of the cost to the country of industrial rheumatism will, I trust, enable the Conference to gain a fuller realisation of the extent of the invalidity now known to be definitely traceable to rheumatism, and will, I hope, result in a further stimulus being imparted to the efforts which are being made to investigate its causation and methods of treatment, with a view to ameliorating the disquieting incidence of the disease.

THE "RHEUMATIC DISEASE."*

BY DR. FERNAND BEZANÇON,
PROFESSEUR DE CLINIQUE MÉDICALE À LA FACULTÉ DE MÉDECINE DE PARIS;
AND
DR. MATHIEU-PIERRE WEIL,
CHEF DE LABORATOIRE À LA FACULTÉ DE MÉDECINE DE PARIS; MÉDICIN DES HÔPITAUX DE PARIS.

AMONG the heterogeneous collection of conditions grouped together as rheumatic, there is one clinical type which seems to us to possess characteristic features, and which we believe to be an independent disease entirely distinct from such other acute joint lesions as may be produced by gout, infective arthritis, or chronic rheumatic conditions. This is acute articular rheumatism, characterised by lesions of the joints, multiple, shifting, and transitory, which subside without leaving any trace, and cardiac manifestations which, on the other hand, persist, become permanent and chronic. This acute polya thritis is called in France acute articular rheumatism, the rheumatic disease or Bouillaud's disease, after the great French clinician who identified it in 1840.

Though the symptomatology of acute articular rheumatism and its cardiac manifestations are well known, we are still unacquainted with its ætiology. The infective origin of the condition appears certain, but it has not yet been possible to demonstrate the specific pathogenicity of any bacterium or more complex parasite. A certain number of physicians still consider that the disease only develops in a particular soil—viz., the arthritic diathesis. Since bacteriological evidence has proved inconclusive, we have, during the last few years, attempted to investigate the true nature of the disease by grouping all the available information on its ætiology, symptomatology, and complications.

Acute Articular Rheumatism and Arthritism.

It seems to us right to refuse to accept any connexion between acute articular rheumatism (Bouillaud's disease) and the arthritic diathesis. The relationship which has been ascribed to acute articular rheumatism applies in our opinion to polyarthritic conditions which are really gouty in origin, due either to true gout or its atypical forms.

In 84 patients carefully studied from this aspect, we only found one case in which the father of the patient was asthmatic, and the mother suffered from migraine; in all the other cases the disease supervened in subjects in whom there was no personal or hereditary evidence of the arthritic diathesis. Chronic rheumatism, gall-stones, gout, diabetes, eczema, hæmorrhoids are exceptional in persons affected with acute articular rheumatism. Besides, this disease affects the hospital class of patients rather than the private class, and it is among the latter that the arthritic diathesis is much more prevalent.

If gout is the disease of the rich, *morbus dominum*, Bouillaud's rheumatic disease afflicts on the contrary all social classes, but mainly the working classes and the poor.

Infectivity of Acute Articular Rheumatism.

The infectivity of acute articular rheumatism was recognised by Stoll, Lanceraux, Thoressen, Feldkamp, and Friedland. Chomel, Hirsch, and Lange (of Copenhagen) have described definite epidemics, de la Harpe described an epidemic at Lausanne in 1846, Lebert one at Zurich in 1857, and Warrentrap one at Frankfort in 1865. Mantle, Edlefsen (at Keil), and Sweifel described epidemics in houses or roads. Ch. Fies found evidence at Oyonnax that rheumatism like tuberculosis affected certain dwellings. The subject has been reconsidered in the light of abundant statistics by St. Lawrence and Faulkner and White.

According to St. Lawrence, in 50 per cent. of the families of rheumatic patients two or more persons affected with

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rheumatism can be found; of 480 persons exposed to the infection, 14·8 per cent. were found to be affected; this proportion is higher than that observed in tuberculosis. The frequent occurrence of rheumatic heart disease is generally recognised: thus, in 22 families out of 50 examined by this author two members were affected with cardiac disease, in five families three members, and in two families four members—i.e., in 29 families out of a total of 50, two or more members were affected with heart disease. Of the 480 persons exposed to the infection 38 had a cardiac lesion, making 8 per cent., which is a much higher incidence than in the general population among whom the incidence is usually estimated at 1–2 per cent. According to St. Lawrence the familial incidence of acute articular rheumatism is higher than that of tuberculosis. Faulkner and White have also reached analogous conclusions. Studying 71 families of rheumatic patients they found that in 35·5 per cent. of the cases more than one member of the family were affected; of 1235 persons exposed to the infection, 8·79 per cent. were attacked.

During the discussion which followed the publication of these results, Wilson stated that he had found that 40 per cent. of the patients affected with rheumatism were the children of rheumatic persons, and that in 28 per cent. of the cases their brothers and sisters were also affected with the rheumatic disease. We, on our part, before we knew of this research, had attempted to obtain similar statistics. As a matter of fact, simple questioning will often fail to elicit whether the joint lesions described in the history are truly rheumatic or whether they are merely painful conditions which have nothing in common with this disease, except that they affect the joints. But among all joint diseases, acute articular rheumatism is distinguished by its affinity for the heart. It is, therefore, the frequency of heart disease in the families of our patients that we have attempted to ascertain.

In 23 families of rheumatic patients whose histories we have been able to obtain, there was no evidence of cardiac disease in the parents or collaterals; it occurred, however, in seven other cases—i.e., in 30 per cent. of our patients. Twice the mother was suffering from chronic valvular endocarditis, twice the father, once the sister, and once the grandfather and grandmother, and once father, mother, and a brother and sister; the familial nature of the disease was particularly evident in this case.

Entourage of Rheumatic Patients.

Thus, our statistical results are lower than those of St. Lawrence, but comparable with those of Faulkner and White. It seems to us, however, that in the families of persons free from rheumatism, acute articular rheumatism and valvular heart disease are much more frequent than these authors state. We examined from this point of view the families of 36 non-rheumatic individuals chosen at random from the in-patients suffering from acute diseases in our department of the Boucicaut Hospital. In 26 of these cases there was no rheumatism or cardiac disease in the ascendants, collaterals or descendants. On the other hand, in six cases—i.e., 17 per cent.—the existence of the rheumatic disease was most probably present in the immediate family of these non-rheumatic patients. Thus, in the entourage of rheumatic patients the incidence is approximately twice as great as in the non-rheumatic. The contagiousness of the rheumatic disease is therefore distinct; it is no way comparable to the exanthemata or certain severe pyrexias. It is, besides, exceptional for the evidence of contagion to be present at the time of the crisis in acute articular rheumatism; acute articular attacks are never observed to arise from an obvious source of infection in the same family.

In fact, if one keeps to the usual methods, the infectivity of acute articular rheumatism is not evident. But that of tuberculosis is no more obvious if only direct contagion is considered. The infectivity of tuberculosis could not be proved until the tuberculosis attacks of adolescence and adult life were recognised as a lighting up of an infection caught during infancy when family contagion could be clearly demonstrated. The fact that obscures the rheumatic problem from an ætiological and a general point of view is the excessive emphasis on the articular manifestations, though these as we shall see in the sequel only constitute an episode in the course of the disease.

No one thinks of tuberculosis pleurisy as being infectious; the tuberculosis is the condition which is infectious. A similar difficulty arises when the infectivity of cerebro-spinal meningitis is considered; only rarely does the infection spread from one case of meningitis to another; but it becomes evident when the initial rhinopharyngitis is considered and when the rôle of germ-carriers in dissemination of the disease is recognised.

It is not certain that definite infectivity is associated with the acute stage of the rheumatic disease. In a hospital ward, patients occupying beds next to a rheumatic patient are never observed to become rheumatic; but it may well be asked whether this infectiousness is not less direct and earlier, whether it is not present some time before the paroxysmal crisis which constitutes the attack of acute articular rheumatism.

The Rheumatic Disease, a Chronic Cardiac Disease with Successive Attacks Affecting the Serous System.

Even those authors who acknowledge the importance of the cardiac lesions which occur during the course of rheumatism, tend to regard them as secondary and to consider acute articular rheumatism, Bouillaud's disease, as primarily a polyarthritis, a disease of the joints. Pediatricians have been struck with the frequency of definite joint lesions during childhood, and the importance of the cardiac lesions. It seems to us that the general point of view in regard to rheumatism should be completely changed, and that we should not consider the disease as consisting of a series of acute lesions, first articular and later cardiac, but rather as a true chronic disease, similar to tuberculosis, syphilis, or malaria, particularly the first of these diseases.

The chronic disease, tuberculosis, may remain almost entirely latent for many years, developing slowly and only becoming evident at certain times by acute attacks, such as an acute attack of pleurisy which may subside or heal. Thus it happens that caught in infancy and generally in the family surroundings, the signs of the disease often remain unrecognised until the time when the disease is definitely revealed as phthisis. Similarly, the rheumatic disease, or Bouillaud's disease, seems to us to be a chronic disease. The articular lesions appear the most important only because of their painful nature, which prevents them from passing unnoticed. The endopericarditis is really much more important, and this after a period of development readily becomes obscured again until a definite cardiopathy is established which leads to cardiac irregularity.

We think that in Bouillaud's disease the reservoir of the rheumatic virus is the heart, the endocardium, the pericardium, and particularly the myocardium. The acute attacks are distinguished either by a recrudescence of the cardiac lesion or by fresh articular symptoms. This method of interpreting the fundamental part played by the heart is the only way of explaining the development of the disease, which frequently after a stage during which articular and cardiac signs are present simultaneously, progresses with cardiac signs only, becoming more and more severe. The appearance of these cardiac signs, accompanied by pyrexia (inflammatory irregularity of Bard, febrile irregularity of Josue), shows clearly the infective nature of the condition, and that it is not purely mechanical as was at one time supposed. The simultaneous occurrence of some joint lesions during the course of these febrile cardiac attacks demonstrates beyond dispute in some cases their rheumatic nature.

The idea of progressive cardiac rheumatism, introduced during recent years into pathology by Ribierre and his pupil Pichon, takes full account of the importance of rheumatic heart disease, which, far from being a complication as formerly believed, is really the most important part of the disease. The pathological anatomy shows well to what type of affection rheumatism belongs. Though in the joints the lesions appear to be congestive, inflammatory, and transitory, so that the disease resembles the acute inflammations, a study of rheumatic endo-

pericarditis shows that the pathological process really differs from these acute lesions, and rather resembles the subacute inflammations with a tendency to chronicity, such as are induced by the higher organisms, for instance, the parasite of tuberculosis or that of syphilis.

Scarring, not Ulceration.

The fact that the main ætiological factor in acute articular rheumatism does not produce vegetations and ulceration like the gonococcus or the pyogenic organisms, but warty nodules, scarring, and stenoses instead, shows its relationship to tuberculosis and syphilis, both diseases characterised by scarring and fibrosis. Is not the resemblance between rheumatic and tuberculous cardiac disease striking? The state of myocardium shows that it is probably the most important lodging-place of the rheumatic virus. Clinical experience reveals more and more the part played by the myocardium in rheumatic carditis. We have helped to emphasise the great clinical importance of these facts, which are, moreover, nowadays generally recognised by the Paris medical faculty.

In addition, the pathological histology shows, as we have seen with Prof. Letulle, a special type of reaction to which Aschoff's work has drawn attention adjoining the sclerotic myocarditis. We have with Prof. Letulle taken account of these interesting Aschoff's nodules, but we found it difficult to make of them true infective nodules comparable to tuberculosis; they represent rather inflammatory nodules with separation of muscle cells which ultimately come to resemble giant cells. Subacute nodular rheumatic myocarditis appears to us to be a specific lesion. In the whole organism, Aschoff's nodules symbolise defective defence on the part of the connective-vascular tissues against attack by the rheumatic virus. In the thickness of the myocardium this nodular inflammation is completed, or rather complicated, by a giant-cell proliferation of the striated muscle cells (muscular giant-cells) following the separation of the myoblastic elements. Atrophic disintegration of all the constituent elements of the myocardium is a later stage in the development of the myocarditis nodule. Finally, the last stage of all these inflammatory changes is represented by scarring (first soft, later hard).

The fibrous strands which thus ultimately separate the myocardial bundles appear to form a particularly favourable site for fresh nodular foci. One might say that the "rheumatogenous" organisms have a particular affinity for cicatricial (fibrous) tissue. The same predilection is shown for the depth of the thickened epicardium and for the fibrous pericardial adhesions. Possibly the same applies to the deeper parts of the thickened scarred endocardium and rheumatic valvular lesions. The presence of numerous acute and subacute nodular foci of different ages in the midst of sclerotic patches in the heart requires an explanation considering its great frequency. It is not sufficient to say that the rheumatic virus prefers the middle of inflammatory cicatrices; one must suppose that it lodges there, and that the repeated exacerbations originate here whatever the interval between them.

Infective Forms of Acute Articular Rheumatism.

Though in the classical types of this rheumatic disease the pyrexia and general symptoms accord with the severity of the joint lesions and the diagnosis is consequently easy, this is not always the case. In certain types which we have studied, joint symptoms are absent or slight, and a temperature approaching 40° C. (=104° F.), headache, severe general symptoms, general malaise, agitation, delirium, torpor make one think of typhoid or a generalised septicæmia, or if signs of endocarditis are present of an infective endocarditis. If there are, on the other hand, pulmonary or pleuro-pulmonary signs, as we have many times observed, one thinks, in view of the severity of the symptoms, of pneumonia; these phenomena are, however, related to the rheumatic disease, and subside with its specific treatment. In all these cases the knowledge of an attack of acute articular rheumatism in the past, or the occurrence, often late, of a few, scattered joint signs, makes one think of rheumatic disease and administer appropriate treatment.

The knowledge of the existence of infective forms of this rheumatic disease should be generally recognised. The physician should know that, beside the classical form in which joint symptoms predominate, there are progressive cardiac forms in which the heart affection dominates the picture. There are forms which are essentially infective in appearance in which the signs of generalised infection prevail, and in which the arthropathy is apparently accessory and often of late occurrence.

The Blood in Acute Articular Rheumatism.

The general view since the time of Garrod, Malassez, and Hayem has been that acute articular rheumatism is a disease which produces a diminution in the number of red blood corpuscles. Nevertheless, it seems to us that however important the diminution in red cells may often be in rheumatic patients, the pallor, which is so obvious in these patients, is not always due to this cause. These patients are more often pale "ochro-dermic" subjects rather than anæmic in the true etymological sense of the word. We have proved by our examinations that an obvious diminution of red corpuscles is often absent during the acute stage in these rheumatic patients.

With regard to the white cell count there is often at the time of the acute attack some leucocytosis which is generally associated with an increase in the percentage of the polynuclear elements. In the uncomplicated cases of average severity the white cell count is generally 13,000 to 16,000 per centimetre, and the percentage of polynuclear neutrophils 75–80. In the milder forms the polynuclear increase is absent, and only a slight leucocytosis is observed. This leucocytosis is absent, however, in those cases which are not accompanied by inflammatory reaction. Entire disappearance of polynuclear eosinophils is not observed during the acute attacks of rheumatic disease, except possibly in the very early stages. The rheumatic leucocytosis and polynucleosis do not continue as long as the acute phase of the attack; they disappear when the inflammatory symptoms of which they are but a sign subside. The transient mononucleosis may be equally important since the number of mononuclear cells may amount to 50–58 per cent. of the total white cell count.

We have, besides, asked ourselves whether the old ideas of the acidity of the blood in acute articular rheumatism conforms to the modern conception of ionic acidity expressed in terms of pH and alkali reserve.

In rheumatic cases we have never been able to detect the least disturbance which might point to an alteration in the reaction of the humoral medium. We have investigated the problem by numerous methods, by estimating the pH and the alkali reserve of the blood and the pH of the urine, the amount of phosphoric acid in the urine, and by other methods. The blood pH and the alkali reserve are normal in rheumatic patients. In these the ionic acidity of the urine also remains normal.

On the other hand, the amount of fibrin in the blood is increased in acute articular rheumatism. In fact, in patients with rheumatism or pneumonia we have found the highest values of fibrin in the blood. In pneumonia values of 10 or 12 g. of fibrin or more per litre of plasma may be recorded (in a patient with serous para-pneumonic pleurisy, which rapidly become purulent, we have observed as much as 16 g. per litre of plasma); in acute articular rheumatism the value frequently reaches and exceeds 10 g. per litre. But the increase in fibrin in the blood is of no value for the differential diagnosis of articular lesions. Though rheumatic hyperfibrinosis is of no diagnostic significance it has some prognostic value. It is, in fact, proportional to the severity of the acute joint lesions. In the obviously inflammatory cases it may reach 9, 10, or 12 g., in the milder forms it does not exceed 6·76, 5·22, and 4·20 g. The more severe the acute joint lesions, the higher the fibrin content of the blood.

If the development of the hyperfibrinosis is followed in a number of patients, as we have done, one finds that far from disappearing under the influences of salicylate treatment at the same time as the pyrexia and the painful symptoms, it continues for a long time after the joint symptoms have subsided. When the temperature has returned to normal and the pains have entirely disappeared, when the administration of salicylates in reduced doses is continued as a simple precautionary measure, some hyperfibrinosis remains as evidence that the inflammatory process still persists. As long as the fibrin value of the blood has not returned to normal or subnormal it is advisable to continue the administration of salicylates.

Treatment of Acute Articular Rheumatism.

Our conception of acute articular rheumatism is not merely of academic interest; it readily suggests ideas of prophylaxis, analogous to those of tuberculosis, which would deprecate the association in the family of young children and patients suffering from acute attacks; this is as yet purely hypothetical. But it follows from our conception that treatment of rheumatism should be continued for some time after acute attacks have subsided by rest and the administration of salicylates; some clinicians even advocate treatment between the attacks with small doses or medium-sized doses of sodium salicylate. We cannot insist too strongly on the importance of the dose from this point of view, and the value of using the intravenous route in resistant cases, combining a mixture of sodium salicylate and glucose and using sufficiently dilute solutions.

We generally use a mixture in which 5 per cent. of sodium salicylate is dissolved in a 10 per cent. solution of glucose. The effect of sodium salicylate on the development of rheumatic endocarditis is still under discussion. Has the drug which is so effective in the articular attack the same effect in the acute cardiac attack? This is a question on which it is difficult to form a definite opinion, and it still remains in the region of hypothesis.

Finally, the idea of the chronicity of Bouillaud's disease (acute articular rheumatism) gives us a means of explaining the beneficial effects of certain thermal waters which appear to help to relieve some lingering joint symptoms, and to mitigate some types of progressive and prolonged cardiac rheumatism. In France some indeterminate and radio-active waters, such as Bourbon-Lancy, Plombières, and Neris, appear to have a beneficial effect on persistent rheumatic attacks; in the acute forms of articular rheumatism they should be avoided, as should alkaline waters and muds; these have a place on the other hand in the treatment of the other kinds of joint lesion, which, we emphasise in conclusion, have nothing in common with acute articular rheumatism except the term "rheumatic."

THE INFLUENCE OF ENVIRONMENT ON RHEUMATIC INFECTION IN CHILDHOOD.*

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Among the present-day problems of juvenile rheumatism there is, in my opinion, none worthier of our accurate study than that of the influence of environment on the large scale production of the disease. My reason for insisting on the pre-eminence of this particular question is that, as the position appears to-day, in our efforts to prevent and control the disease in this country, we have a better chance of success by getting to work on environmental influences than by any other means. With whatever readiness public and private funds may be forthcoming for the relief of the child-victims of rheumatism, it is its prevention which demands our hardest thought and greatest effort.

My subject naturally divides itself under two chief headings: first, the evidence that environment is an important predisposing cause of juvenile rheumatism; secondly, the nature of the environmental factors at work.

Before I pass on to these two questions I want to spend a moment in considering with some precision what it is that we have in mind when we speak of a disease as being "produced by" some fault of environment. Clearly, in the case of an infective disease, we cannot regard environment as the "cause" in any strict sense; but we may think of it as leading to increased virulence in the bacterial agent, to a diminished resistance in the patient, or to the development of some abnormal condition which, in its turn, acts as a preliminary to the infection in question. Thus, in the case of juvenile rheumatism, environment might act by increasing the activity or dosage of the infecting micro-organism, or by diminishing the child's resistance to the rheumatic infection, while it might also play an important rôle in the production of the disease, were it to predispose towards the occurrence or persistence of tonsillar infection.

But for myself I do not doubt that environment also works more frequently and more powerfully in another way—namely, not so much towards originating the infection as by stimulating and unmasking an infection already latent, turning it from a mild to a severe attack. Now if this is so in the case of juvenile rheumatism, obviously it is of great importance, for it means that environment is specially concerned in the production of rheumatic heart disease.

There is one further preliminary point to be considered. In thinking out the ways in which environment may be conceived to predispose towards an infection, it is difficult to get away from the idea of its influence being at work on some micro-organism external to the patient, lurking ready to attack and infect him. But what if the modern conception of the bacteriology of rheumatic infection is correct, that the infecting agent is a constant inhabitant of the human alimentary tract which becomes exalted in virulence, assumes a pathogenic rôle, and so produces the disease? In such a case we must be prepared to find that environment plays a part different in detail from what we are accustomed to observe.

Juvenile Rheumatism an Environmental Disease.

The first question which I have to discuss is this: Is there evidence that environment plays an important part in the production of juvenile rheumatism?

Considered as a widespread endemic disease of this country, juvenile rheumatism shows one outstanding feature—namely, that it is massed amongst the children of the poor, and practically absent from the children of the well-to-do. I need not to-day produce figures to prove the truth of this statement, which is, I think, universally accepted. We need no better proof of it than the fact that the ordinary educated layman has still no idea that rheumatism is a common, or indeed possible, disease of children. He is quite unfamiliar with it in the families of his friends and relatives.

This class incidence is so clear that it is evident that we cannot hope to understand the large scale production of the disease until we know the explanation of it. Prominent among the possible explanations comes, of course, the influence of environment. Have we any direct evidence that this is the correct explanation? We have one very strong and simple piece of evidence: I allude to the investigation published in the Medical Research Council's Report into the incidence of rheumatism in poor-law residential schools. Four schools, housing about 1800 children, who all came from the poorer classes, were examined over a number of years. Left in their own homes it is impossible not to suppose that dozens

* Communicated to the Bath Conference on Rheumatic Diseases.

of instances of rheumatism would have arisen amongst them; yet transferred to the residential schools they remain practically free of the infection. On this single piece of evidence alone we may confidently base the opinion that juvenile rheumatism is essentially an environmental disease. There are, of course, many other confirmatory proofs of this view.

There are other possible explanations of the freedom from rheumatism enjoyed by the children of the richer classes, such as contagion, heredity, and diathesis. Heredity and diathesis are hardly within my subject, so that I will only say that the evidence just quoted from the residential poor-law schools makes it quite clear that they cannot be factors of great moment. Contagion falls within the scope of environment, and I must digress to consider it.

Contagion.—The question, then, can be put thus: How far is the mass production of rheumatism amongst the children of the poor due to case-to-case infection?

We may be confident that in the healthy surroundings of a hospital ward rheumatic infection does not spread from one child to another; can we be equally sure that in the unhealthy homes of the poor this does not occur? I think we can. The theory of contagion has no sort of supporting tradition behind it among clinical workers at rheumatic problems. The investigations of the Medical Research Council's Report were specially undertaken with a view of testing this theory, but no evidence in its favour could be found. Further, spread by contagion could not explain the class incidence of the disease when that is considered accurately, as we shall see later; and it is not in agreement with the modern bacteriological conception of rheumatic infection. If this last is true we must liken rheumatism to such infections as lobar pneumonia and appendicitis rather than to diseases due to imported organisms such as tuberculosis. Now everyone has seen cases of pneumonia or appendicitis arise in more than one member of a family synchronously or close together, but does anyone think that contagion accounts for the thousands of cases of these diseases which occur?

The theory that juvenile rheumatism spreads by case-to-case infection has its most doughty champion in A. C. F. Halford, of Brisbane, and we cannot deny that where an infective disease is common and is massed in one section of the community, many of its ætiological factors will appear consistent with a possible contagious spread; but to allow that such a method of infection accounts for the huge numbers of rheumatic cases which we find in this country would, I am sure, be absolutely wrong. Were contagion at the botton of it all I am convinced that we should have known it long ago.

Conclusion.—To sum up, therefore, the general question of the influence of environment on juvenile rheumatism, we may regard this influence as so powerful that it is fair to regard the rheumatism of childhood as an environmental disease. In saying this I think I am supported by the general trend of medical opinion in England.

The Environmental Factors in Juvenile Rheumatic Infection.

I pass now to discuss the nature of the various environmental factors which aid and abet the production of juvenile rheumatism. As a preliminary I should like to suggest that so close is the association between juvenile rheumatism and tonsillar disease, that it seems as though the environmental factors at work must, to some extent, centre round the production of diseased, infected tonsils; and in saying this I have not at all in mind the too familiar child with enlarged tonsils and adenoids. I do not fear contradiction when I say that this is not the type which provides the bulk of rheumatic children. And here I may digress to say that in my view one of the reasons of the immunity to rheumatism found amongst rich children is the present-day practice of early and complete removal of diseased tonsils. When we remember that 70 per cent. of the boys now joining Eton College have already had their tonsils removed (W. Attlee), we see that the numbers are large enough to make a difference between the rich and the poor.

Climatic and Seasonal Influences.—Passing over many interesting points in connexion with the climatic and seasonal incidence influences on the production of juvenile rheumatism, I will content myself with saying that the world distribution of the disease and its seasonal incidence in this country both suggest strongly that a combination of damp and cold predisposes to it.

Poverty.—I come now to the all-important influence of poverty. It is clear that were there no poverty there would be practically no rheumatism problem in children; but the question arises: Is the massing of juvenile rheumatism amongst the poor due to their poverty per se or to some other factor, a concomitant of poverty?

I have already spoken of the remarkable freedom from the disease enjoyed by the children of the rich. The rheumatic stratum of society has, therefore, an upper limit, and consideration of the incidence of heart disease in secondary schools suggests that this limit runs at, or perhaps a little above, the grade attending the State elementary schools.

Yet it is probably not correct to regard juvenile rheumatism as a "poverty disease," for there is evidence that its frequency does not increase as the lower depths are reached. This was pointed out by F. S. Langmead as long ago as 1910, and has been repeatedly confirmed by nearly all who have investigated the matter. A. P. Thomson, who has made a very long and careful inquiry into this point in Birmingham, finds the same fact, and further that the rheumatism map of that city does not accurately correspond with the poverty map. The same class incidence has been found by V. Coates and R. E. Thomas in Bath, by J. Morrison in Bristol, by R. H. Vercoe in Chelmsford, and by myself in West London. Particularly clear on this point was the verdict of the Medical Research Council, and the wording of it is worth quoting: "If hospital patients are divided into three classes according to the degree of poverty, the poorest of these three, the very poor and destitute, show a lower incidence of rheumatism than the other two."

In the same way the concomitants of deep poverty, such as underfeeding, overcrowding, excessive dirt, defective sanitation, have not been found to play a conspicuous part in predisposing to this disease; and if the infection is not contagious and is not due to a germ imported into the patient from outside, there seems no particular reason why they should do so.

I must not be interpreted as saying that juvenile rheumatism is rare in the poorest, for this is quite untrue; nevertheless we seem to be faced with this peculiar fact, that although the disease is so strictly confined to the poorer classes, it hits particularly the upper poor, families of policemen, postmen, railwaymen, and decent artisans. I am told that no other disease, except dental caries, shows quite the same class incidence as this.

To sum up this matter: we must conclude that although poverty is a predisposing cause of immense importance, it is not merely poverty per se which is at work; some other factor, a common concomitant of poverty, must also be at work.

Urbanisation and Industrialisation.—We are fairly sure that juvenile rheumatism is a disease of towns rather than of rural areas, and of industrial towns rather than of residential towns. We are waiting for fuller and more reliable figures from rural districts to confirm this, and we hope that these will be forthcoming from the "field investigation" in these western counties inaugurated lately by Dr. Carey Coombs.

School Environment.—When we remember that juvenile rheumatism can be regarded as essentially a disease of the elementary school child, whereas richer children remain unaffected, we may naturally imagine that the mere attendance at an elementary

school has a deleterious effect in predisposing towards the infection. Comparing the circumstances of the rich and the poor child attending a day school there are several differences that militate against the poor child: compulsory attendance, the system of education grants per attendance, lack of protection against exposure to cold and wet weather, lack of changing and drying facilities if arriving wet at school; all these things militate against the poorer child, especially against the delicate child, and most of all against the rheumatic child. We cannot, therefore, but conclude that in such circumstances the rheumatic child must be apt to do badly and to acquire heart disease, just as the strain of school work, especially of a competitive sort, is apt to bring on chorea in an infected subject; yet in the actual origination of the disease the home environment plays, in my opinion, a much larger part than does the school environment.

Diet and Nutrition.—That diet and general nutrition acting through intestinal indigestion and debility may play a part in the production of juvenile rheumatism has occurred to many minds, particularly, perhaps, in connexion with the abstruse subject of the determination of relapses and recrudescences. I have myself failed to reach any conclusions on these matters. Dr. C. W. Vining has particularly studied these aspects of the problem, and we are to have the opportunity of hearing his views later in this conference.

Damp Dwellings.—I come last to a subject which I believe to be of great importance—namely, the influence which residence in damp dwellings exerts on the production and unmasking of juvenile rheumatism. Some affect to regard this as a mere bogy; others think that it works merely by a lowering of resistance, and has no particular relationship to rheumatic infection. For my part I regard damp as the great ally of poverty in producing rheumatism and heart disease in children. In this matter I have in mind damp associated with cold.

Evidence associating damp dwellings with a heavy incidence of juvenile rheumatism is accumulating. The world distribution and the seasonal incidence in England are such that it seems hardly possible that damp and cold should be of no moment in predisposing towards the infection. Further, we can easily see that they might do so through their tendency to give rise to catarrhs and tonsillitis. Again, it is a suggestive point that clinicians note that in damp surroundings rheumatism tends to run an intractable course, leading to severe heart disease. F. J. Poynton, our great pioneer in all matters concerned with acute rheumatism, has taught this for many years.

When we come to the distribution of juvenile rheumatism in towns it is found that it tends to follow watercourses, to increase in low-lying areas, and although the "rheumatic map" corresponds roughly to the "poverty map" there are deviations from it to be accounted for by these tendencies. In Paddington, for instance, we get most of the rheumatic cases not from the poorest streets, but from those close to the canal and submerged rivers. I have already mentioned A. P. Thomson's rheumatism map of Birmingham.

In the investigations undertaken for the first report of the British Medical Association's Committee of Inquiry on Rheumatic Heart Disease in Children, the housing of rheumatic children was examined in Bath, Bristol, and West London, and it was found that in 62 per cent. of the instances the children were living, when first showing symptoms of the infection, in damp houses. In Paddington, in a new series of over 200 cases, I have found much the same proportion, whereas taking non-rheumatic families the proportion living in damp houses is only about half as large. We also find that the middle floors of the houses, which are, as a rule, the driest floors, provide the fewest number of cases.

Such facts as these suggest that damp dwellings have a connexion with the development of juvenile rheumatism, and that this connexion is something real and particular to this disease. It may be asked if stress is to be laid on the site of the house or the state of the house itself. Of course, where the site is damp, damp houses are likely to be common, and I am persuaded that there are building sites on which no cheap houses can ever hope to remain dry; but I think the condition of the house is of more importance than that of the site, that it is safer to live in a dry house on a damp site than in a damp house on a dry site. One piece of evidence may be quoted. Although in Eton Town there is, I am told, plenty of juvenile rheumatism, in Eton College, Beaumont College, and the Imperial Service College, all lying in the same district and accommodating between them some 1600 to 1700 boys, the disease is practically unknown.

When I was dealing with the association of poverty and juvenile rheumatism, I said that poverty acting alone and of itself would not account for the mass production of the disease—that some other factor, some common concomitant of poverty, was also at work. This factor I believe to be that of residence in damp dwellings. This governs to some extent the distribution of the disease within the rheumatic stratum of society, and determines in many cases why one family suffers and another of the same grade of poverty escapes.

To this view the objection may be made that if damp has this effect the poorest would suffer most, as they are likely to live in the dampest houses. To this I would submit the following answers: (1) The immunity to rheumatism in the poorest is only relative; no one thinks that in them the disease is rare, on the contrary it is quite common. But the point is that if all the attributes of poverty acted together, rheumatism would be more common and not less common in the poorest than in the stratum above them; whereas, if one of the attributes acts out of proportion to the others this sequence will not necessarily be found. (2) The slum child does not necessarily live in a damp room; on the contrary, many slum houses are well-built old houses, which, though most dilapidated, remain weatherproof. In my view where a slum dwelling is damp the incidence of rheumatism will tend to be heavy; where it is dry it will tend to be lighter. (3) Overcrowding, which is notably absent in rheumatic cases, by promoting warmth may tend to prevent damp. However undesirable it may be from other aspects, it may well be that for many to live together in one room used as a kitchen, may give some protection against this particular disease.

Conclusions.

1. Environment, taken as a whole, is of such importance in the production of juvenile rheumatism that the disease may be regarded as an environmental disease. To alter the environment of children is sufficient to prevent the appearance of the infection amongst them.

2. General lowering of resistance is produced by such factors as poverty, urbanisation, and industrialisation; the tendency specially towards rheumatic infection is largely determined by living in damp rooms, exposure to wettings, chills, catarrhs, &c.

3. Of the environmental factors at work the two of chief importance are poverty and damp houses.

PAYING PATIENTS AT MANCHESTER EYE HOSPITAL.—The annual report states that the nine beds (out of 148) which were experimentally set aside for paying patients have been constantly occupied. Last year there were 2579 in-patients and 32,346 out-patients. Another experiment, begun last year, brings to the institution 10*s.* 6*d.* per week for an in-patient and 2*s.* 6*d.* for an out-patient who is a member of the Hospital Saturday Fund.

VENTNOR HOSPITAL FOR CONSUMPTION.—At the annual meeting of the governors of the Royal National Hospital for Consumption at Ventnor it was stated that it was designed to build a modern sanatorium for the use of ultra-violet rays, and for the more intensive application of heliotherapy to tuberculosis in bones and joints, but that the cost would be £50,000. Although one-half of the patients are from London the geographical limitations of King Edward's Fund do not permit of help from that source.

CICATRICIAL STENOSIS OF THE ŒSOPHAGUS.*

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Cicatricial stenosis of the œsophagus is much less common in this country than in America and on the continent, probably because solutions of lye, which consist mostly of caustic soda, are there in general use for household purposes and are drunk in mistake for water, coffee, or wine. The caustic burns which follow lye-drinking are the commonest cause of stenosis of the œsophagus; N. Zimmony states that out of all cases admitted into the throat departments of the hospitals of Berlin and Budapest during the last three years, 10 per cent. had œsophageal stenosis from this cause. J. Guisez, of Paris, analysing 2500 cases of diseases of the œsophagus, examined with the œsophagoscope, found cicatricial stenosis in 185 cases, or 1 in 12; all except 1 per cent. were due to swallowing caustic. Other causes are burns from swallowing nitric, sulphuric, or other acids, bichloride of mercury, or ammonia. The infective fevers, such as scarlet, diphtheria, and typhoid, also syphilis and tuberculosis, sometimes produce ulcers in the œsophagus which may cause stenosis on healing. Chevalier Jackson states that peptic ulcer of the œsophagus is also a cause, and considers that a spasmodic stenosis, with its consequent œsophagitis and erosions and later (pyogenic) infection, may occasionally bring about cicatricial narrowing. The prolonged retention of a foreign body may, when it gives rise to surrounding ulceration, cause stenosis, as also may unskilled attempts at removal of foreign bodies. Stenosis may also result from gunshot and other wounds or burns from hot food or drink. Gottstein reports a case caused by swallowing a hot potato. Gabriel Tucker states that the majority of cases admitted to the Bronchoscopic Clinic, Philadelphia, are children whose stenosis is usually due to swallowing lye.

A single stricture is rare and generally congenital. Usually there are two or more strictures which rarely involve the complete circumference of the œsophagus. Successful treatment depends on this fact, for although the scar tissue is inelastic, the remaining segment of normal œsophageal tissue can stand stretching, and so dilatation is possible.

According to Jackson, the commonest sites of stricture are at the points of normal narrowing of the tube—namely: (1) at the level of the left bronchus; (2) at the level of the crico-pharyngeus muscle or the circular fibres of the inferior constrictor of the pharynx; (3) at the hiatus level (diaphragmatic).

On examination with the œsophagoscope the gullet is often found to be dilated above the stricture, and if the stenosis is of some duration a certain amount of œsophagitis may be present, with erosions of the mucous membrane. The scar is usually pale or white and may be level with the surrounding mucosa or depressed, or may show as a hard ridge. In some cases there is marked stagnation of food and secretion above the stenosis, and these must be washed out before a proper examination can be made.

Symptoms.

The immediate effect of swallowing a caustic is a severe acute œsophagitis, with difficult and painful swallowing and some fever. These symptoms usually pass off in a fortnight or less, and swallowing may become almost normal for a time. Then, as contraction gradually develops, the patient experiences an increasing difficulty in swallowing, first solids, then liquids, and finally, in severe cases, even saliva. Loss of weight is progressive and may become very marked. In the earlier stages the symptoms may be intermittent and may closely simulate a spasmodic stenosis; this is due to temporary blocking with a large bolus of food. Occasionally contraction only occurs very slowly and the patient may first suffer from it many years after swallowing the caustic.

Diagnosis.

The history of having swallowed a caustic or of one of the other ætiological factors already enumerated will, of course, make a diagnosis of cicatricial stenosis very probable. Certain conditions must, however, be excluded. These are cancerous growth of the gullet, foreign body, spasmodic stenosis, diverticulum, and the various forms of compression stenosis such as aneurysm, malignant growths of intrathoracic viscera, and goitre. The first step is X ray examination with an opaque mixture which will usually give great help. Then an examination with the œsophagoscope should be made. A spasmodic stenosis will yield to gentle and continuous pressure with the tube or, if the examination is made under complete general anæsthesia, will not be encountered. Cancer will reveal itself as a fungating area, bleeding readily, or as a resistant infiltration of the wall of the gullet. Compression stenosis is characterised by a sudden change of the full lumen to a linear or curved slit: and the compressing mass is sometimes felt by the œsophagoscope and the radiogram may show the cause.

Prognosis.

Formerly, when blind bouginage was the routine treatment, the outlook was bad, as in many cases the œsophageal wall was sooner or later perforated. Some pressure is necessary to dilate and traverse a stricture, and the bougie may be engaged in the bottom of a pocket and forced through the wall.

Under modern methods the prognosis is good; the earlier a case comes under observation the better the outlook and the shorter the treatment.

Treatment.

It would serve no useful purpose to describe the many methods of treatment which have been tried. Blind bouginage may be mentioned only to be condemned by the oft-quoted dictum of Trousseau: "Sooner or later all cases of stricture of the œsophagus die of the bougie."

There are two main lines of approach to the stricture: (1) Through the mouth; (2) from below, after a gastrostomy.

The passage of graduated bougies under direct vision with the œsophagoscope is favoured by Chevalier Jackson. The size of the bougie is increased very slowly and it is passed at intervals of four to seven days. Multiple strictures are dilated in order from above. P. P. Vinson, of the Mayo Clinic, and H. S. Plummer, among others, have induced the patient to swallow a string, and then threaded one end of this through an eyed bougie. The string is pulled taut and the bougie pushed and guided through the stricture on the string. Many successful cases are reported as the result of treatment by this method. Loretta and Mickerliez introduced rubber-copper forceps upwards into the stricture from the stomach and forcibly dilated it. Some successes were reported, but the mortality was high. One difficulty was in finding the hiatus of the œsophagus or cardia. Billroth passed from the stomach a filiform bougie to which a string was attached and, fixing the string on to a conical-shaped bougie, was able to pull it through the stricture. Ochsner and Guisez have both passed strings from below and pulled through a single and a doubled rubber tube respectively.

The Gabriel Tucker Method.

I have recently employed this method in three cases. The first essential step is a gastrostomy, which, by freeing the œsophagus from the irritation of retained food and consequent œsophagitis, will usually soon cause the lumen to enlarge sufficiently to allow the swallowing of a silk thread. The next

* A paper read at a meeting of the Manchester Surgical Society, Dec. 8th, 1927.

stage is to induce the patient to swallow a string of No. 15 button-hole twist silk which can usually be induced to pass with a draught of water; in one case the first few inches were coated with chocolate. Occasionally Tucker found it necessary to attach a split shot to the end of the silk. For small children (I myself have not treated any) the silk is passed through the nose on a soft rubber catheter into the nasopharynx, and then introduced, a little at a time, from the anterior nares. Considerable time and patience may be needed, but the silk will be swallowed eventually. The distal portion has then to be found in the stomach and brought out through the gastrostomy wound; this is done with a blunt hook or blunt tonsil pillar-retractor, and may take considerable fishing. A length of No. 4 twisted silk is now attached and pulled through from stomach to mouth, and the two ends tied together. The bougies are made of rubber, moulded on to braided silk thread. A loop is left free at each end, and the intervening silk is knotted to prevent the rubber pulling out. The ends of the bougie are tapered and are graduated, like catheters, from 10 to 30, French scale. The length of each bougie is 35 cm., and this is long enough to engage all the stenosed areas simultaneously. The silk is cut and the lower end attached to one end of the bougie, to the other end of which a new piece of silk is tied. The upper length of silk is pulled, and a finger is passed to the back of the tongue and the thread levered over it. The bougie is pulled up very gently into the stricture, where it is allowed to remain for half an hour; it is then withdrawn through the mouth, bringing with it a fresh length of silk, the two ends of which are tied together and left. My patients preferred the silk through the mouth, but in children it must be brought through the nose, otherwise they will bite it through. The bougie is passed once weekly, and a larger size is not passed until the one in use passes quite freely. No anæsthetic is used, there is no discomfort, and the patient does not remain in hospital.

Although the gastrostomy feeding-tube remains in situ, food is very soon taken by the mouth. Jackson states that a lumen of 7 mm. is sufficient for all usual purposes. We have found that roast beef is the last thing to resist swallowing.

CASE 1.—A chemical student, aged 20, was admitted into the Manchester Royal Infirmary under Dr. Craven Moore with the history of having swallowed some caustic soda when using a pipette five weeks previously. She suffered severely from dysphagia and vomiting and could only swallow fluid in small sips. Her weight was 5 st. 8 lb. The X ray report from Dr. A. E. Barclay stated: "Conical stricture—smooth—lower third complete—œsophagus irritable, showing well-marked peristaltic and retroperistaltic waves." The case was referred to me for examination with the œsophagoscope, and I reported "Non-malignant organic stricture 11½ in. from the teeth" and ventured to suggest an immediate gastrostomy and later the use of bougies. Mr. A. H. Burgess performed the gastrostomy and suggested that I should try Plummer's method. It was finally decided, however, to use the Tucker method, and this has been carried out as described, treatment lasting about a year. The patient now weighs 8 st. 12 lb. and can eat any food, and no bougie has been passed for three months; the silk thread is discarded but the gastrostomy has been kept open in case of any further need of bouginage. (A year has elapsed, the gastrostomy wound is closed, and the patient can swallow any kind of food. She carries out her full duties as a school teacher.)

CASE 2.—Male aged 47. Swallowing became slightly difficult in 1914, and the difficulty gradually increased until 1921, when only fluids could be passed. The cause was the accidental taking of a nitric acid preparation used in an engineering works for cleaning metal. Lived on liquid food until operation and retrograde bouginage in August, 1926. Bougie passed once weekly, the large size being reached by November the same year. Solid foods of all kinds now taken when carefully chewed. Weight increased from 7 st. 5 lb. to 8 st. 4 lb. X ray photograph showed irregular linear stricture about one inch above the diaphragm.

CASE 3.—Male aged 55. Had difficulty in swallowing for 12 months; cause uncertain, but probably the swallowing of a corrosive. Has had bougies passed under general anæsthesia on three previous occasions. Admitted to the Royal Infirmary under my care, after a gastrostomy by Mr. Howson Ray the usual routine was followed. This case proved more difficult than the two previous ones, in that the bouginage had to be continued once weekly or relapse ensued. With regular treatment he is able to swallow all kinds of food, including roast beef.

In this paper I have drawn largely on the writings of Dr. Gabriel Tucker, of Philadelphia, who was also kind enough to give me personal instruction in the method.

A CASE OF

CONGENITAL MORBUS CORDIS

STUDIED OVER A PERIOD OF TWELVE YEARS.

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THIS is the case of a man who was weakly, pale, and short of breath from early childhood, who at the age of 18 came under medical observation, and who, until his death last year at 30, was under regular medical supervision. A constant visitor to many of the London teaching hospitals and a frequent clinical case at medical examinations, he was brought finally to the London Temperance Hospital, where we had an opportunity of studying the case clinically and of a post-mortem examination.

On May 7th, 1927, the patient, aged 30, had a fainting attack in a neighbouring street and was brought by the police to the London Temperance Hospital.

Résumé of Past History.—He had been a seven months baby of an apparently healthy stock—a "blue baby"—under weight and weakly; as a child he was unable to run about like other children on account of shortness of breath and fatigue on the least exertion. He was kept at home and was sent to a special school. In 1915, at the age of 18, he first came under observation at St. Bartholomew's Hospital, where he was admitted for investigation as he had been rejected from the army on account of his heart. He complained of occasional pain round the heart and, for the three months prior to his examination, of a cough with a slightly blood-streaked sputum.

As a boy he was ill-nourished, cyanosed, somewhat underdeveloped, with bulbous fingers and toes and an infantile-shaped chest. His heart was not enlarged; the pulse-rate was regular at 80–90, the systolic blood pressure varied from 96–119 mm. Hg; a soft systolic murmur was heard to the left of the sternum, confined to the apical area. The spleen was not palpable, the stools were normal. The blood picture showed red blood corpuscles 8,300,000, Hb 150 per cent., C.I. 0·88, white cells, 7600. A radioscopic examination revealed no abnormality of the heart and some increased hilar opacity, but normal lung areas. The diagnosis of congenital morbus cordis was made; a note was added to the effect that no congenital defect other than a doubtful patent foramen ovale was found, and the patient was discharged as unfit for the army. He continued his normal restricted life.

Two years later, at the age of 20, he began to complain of giddiness and fainting attacks, associated with severe frontal headache, which appeared to be brought on by walking. Later he had occasional hæmoptyses. It was on account of these attacks that during the next ten years he was admitted to so many London hospitals.

In 1924 he was admitted unconscious to St. Bartholomew's, brought by the police. When seen in the surgery he was deepy cyanosed, unconscious, retching violentlyand vomiting small quantities of food. The breathing was slow and weak. The radial pulse was not palpable. Strophanthin, gr. 1/100, was given intravenously, the pulse improved rapidly, and was soon of good volume at a rate of 80 to the minute. The patient gradually regained consciousness. He was able to describe how he had suffered from attacks of giddiness as long as he could remember; that suddenly he would feel as if his head was going round, objects would look double, that to prevent himself from falling he would lean against the wall or grasp the railings during an attack. The seizure would last a few minutes and be followed by a severe headache, localised across the forehead and down the right side of the face; with this would be associated a severe stitch-like pain shooting from the left groin to the left nipple. The attacks had gradually become more severe and of longer duration; there would be loss of consciousness and he would feel unwell for two or three days afterwards.

In 1926, on account of severe hæmoptyses, he was admitted to University College Hospital. Investigation revealed no evidence of pulmonary tuberculosis, and sputa

examinations were repeatedly negative. On radiological examination there was much fibrosis of the lung roots, with a heart shadow slightly larger than normal. Electrocardiographic tracings revealed a normal rhythm with right-sided preponderance and an enlarged P wave in lead II.

Early in 1927 he was readmitted to St. Bartholomew's in another attack of unconsciousness, and the diagnosis of congenital defect was again made. The red cell count in the blood was 9,200,000 per c.mm., the oxygen capacity of the blood was 20·21 vol., and the arterial saturation 63 per cent.

Condition on Admission to the London Temperance Hospital.—He was brought in unconscious, collapsed, with a rapid pulse and subnormal temperature. On examination next morning (May 8th, 1927): Thin man, medium height, markedly cyanosed cherry-coloured lips. Eyes: Pupils small, equal, react to light and accommodation. Mouth: Tongue furred, mucous membranes cyanotic; teeth very septic, many missing. Neck: No abnormal pulsation, no glands palpable. Chest: Poorly covered, symmetrical except for slight precordial bulge. Lungs: Air-entry good; vesicular breathing; no added sounds. Heart: Apex-beat not seen, but felt in fifth left intercostal space, 4½ in. to the left of the midline; localised, not heaving. No thrill at apex or base. A.C.D. not enlarged. Blood pressure, 95/50. Radial pulse palpable; fair excursion; regular rate 120; heart sounds clear, but I and II at apex somewhat muffled; pulmonary second sound not accentuated. No bruits. Abdomen not distended; moves well. Spleen not palpable. Liver not palpable. Abdominal reflexes normal. Marked clubbing. Tendon reflexes all exaggerated; no signs of congestive failure. Urine: Faint trace of albumin; specific gravity, 1015. No sugar, blood, or acetone. Blood counts: R.B.C., 8,310,000; Hb, 90; C.I., 0·54. W.B.C., 8600 (immediately after venesection); polymorphonuclear, 48 per cent.; lymphocytes, 47 per cent.; large mononuclear, 3 per cent.; eosinophiles, 1 per cent.; basophiles, 1 per cent. Two weeks later: R.B.C., 928,000; Hb 92; W.B.C., 9600.

Ophthalmic Examination.—Conspicuous engorgement of retinal vessels both arteries and veins; the disc highly coloured. Otherwise normal. Sputa examinations for tubercle bacilli negative.

A diagnosis of congenital morbus cordis was made. The polycythæmia was thought to be essentially secondary to the congenital heart defect, but due in part to some focus of infection. A search for foci was made, and on May 13th six carious teeth were removed under general ethyl chloride anæsthesia.

On May 16th the patient complained of pain in the neck, which was relieved by fomentations. A throat swab showed a predominant staphylococcus and *Micrococcus catarrhalis*. On the 18th he complained of severe headache situated bilaterally in the frontal and temporal regions, and of a cold and running from the eyes. The mouth appeared clean. A careful examination of the central nervous system elicited no abnormal signs. A small venesection was performed. On the 24th a venesection of 200 c.cm. of blood relieved the headache. The temperature became raised, varying from 100°–103° F., pulse-rate 85–100. On the 26th the temperature remained raised the patient hiccoughed frequently; the discs appeared normal. All the tendon reflexes of the lower extremities were symmetrically exaggerated. On lumbar puncture 40 c.cm. of turbid fluid under greatly increased pressure were withdrawn and revealed many pus cells, the majority of which were polymorphonuclear, and a Gram-positive bacillus. The fluid was cultured on blood-agar; there was no growth. On the 27th the patient died.

Post-mortem Examination.

Cyanotic asthenic type; marked clubbing of the fingers; the mouth appeared clean and the tooth sockets healthy.

Chest: A few pleural adhesions, no free fluid. The lung substance somewhat œdematous, air-containing; no evidence of old scarring, calcareous glands, fibrotic or bronchiectatic changes. The trachea and bronchi appeared normal and the bronchial arteries slightly enlarged.

The heart did not appear enlarged—weight 12½ oz. The pericardium was normal. On examination of the external surface a single vessel appeared to arise from both ventricles; this proved to be the aorta. The right ventricle was enlarged, and the musculature was hypertrophied so that its wall equalled that of the left in thickness. In the substance of the upper part of the anterior wall of the right ventricle a separate cavity, measuring about 1½ in. by ¼ in., was found. This proved to be the bulbus cordis, existing as a separate chamber, as normal fusion with the right ventricle had not taken place. This chamber was found to communicate with the right ventricle by a small aperture, through which a probe could just be passed. The tricuspid and mitral valves appeared to be normal. The foramen ovale was a comparatively wide slit-like orifice, and the interventricular foramen was the size of a shilling. The aorta arose from the right ventricle; the circumference of the first part was slightly greater than normal. The valves were normally formed and healthy. There was only one coronary artery, which arose from the normal position of the right coronary artery. The intima of the aorta showed slightly early atheromatous changes. The ductus arteriosus was closed.

Arising in the musculature of the right ventricle, immediately to the left of the aorta and immediately superior and anterior to the bulbus cordis, a very small pulmonary artery was found. There was no communication between it and the bulbus cordis. There were three malformed valves, suggesting arrested development at about the third week of intra-uterine life; immediately distal to these the pulmonary artery widened slightly.

Abdomen: Spleen slightly enlarged, congested, no infarction. Liver slightly enlarged, congested. Kidneys normal; stomach and intestines normal.

Brain: Covering the vertex of the brain and extending down to the base was a quantity of green pus. The brain substance appeared somewhat insected, but otherwise normal. The fluid in the ventricles was clear. In the right posterior temporal region, lying deep to the lateral ventricle, was a localised abscess cavity, measuring 1½ in. by 1½ in., containing fluid thick green pus.

Discussion.

The case is of interest in many ways. Clinically it has been studied over a period of ten years. Considering the cyanosis and the associated polycythæmia as the dominating factors, polycythæmia rubra, Vaquez's disease, and polycythæmia secondary to a congenital heart defect constitute the initial differential diagnosis. The history, particularly the age at which the first symptoms were manifested, excludes a primary polycythæmia. In 1888 Fallot [1] pointed out the "tetralogy" of pulmonary stenosis, intraventricular septal defect and dextraposition of the aorta with hypertrophy of the right ventricle as the commonest underlying condition in patients with congenital cyanosis who reach adult life; he noted that cyanosis is usually absent in cardiac defects without associated pulmonary stenosis. The case described is one of congenital cardiac defect due to arrest of growth before the different parts of the heart had been entirely formed. It falls into the "cyanotic" group. The very marked cyanosis is characteristic of those cases of congenital cardiac disease in which there is a serious interference with the circulation leading to a pathological increase in the amount of reduced hæmoglobin in the circulating blood. Deficient aeration of the blood is the essential element; right heart hypertrophy, increased respiratory activity, and polycythæmia are developed in an attempt to supplement the inefficient pulmonary circulation. Chronic asphyxia develops, with consequent peripheral clubbing and retinal changes. In the various descriptions of such cases, and in the classifications of Maud Abbott and others, an enlarged heart and the presence of precordial thrills and cardiac murmurs are noted. Although a precordial thrill is present in many of these cases Rolleston accounted for the absence of thrill in a somewhat similar case by the presence of a large defect of the septum, through which the blood passed with ease into the aorta. This is the explanation which I offer in this case. The absence of abnormal cardiac murmurs is explained by the complete absence of blood in the pulmonary artery.

Repeated clinical, bacteriological, and radiological examination revealed no evidence of pulmonary tuberculosis. The hæmoptyses may have been due to congestion of the pulmonary circulation, associated with a slight atheroma of the enlarged bronchial arteries. The slight atheroma at the base of the aorta was not, I think, incompatible with an acute terminal infection.

The faints were probably cerebral anoxæmic attacks. Curious epileptiform attacks of a similar nature, in a young man with a similar cardiac defect, have been described by Campbell Howard as apparently due to a temporary thrombosis of the cerebral capillaries produced by a high degree of viscosity of the polycythæmic blood.

Cerebral abscess is a not uncommon complication. It occurred six times in a series of 96 cases of

[1] Fallot: Marseille Méd., 1888.

pulmonary stenosis recorded by Abbott.[2] Similar cases are recorded by Ballot, Peacock,[3] and others. The cerebral abscess was probably due to an infective embolus of a paradoxical character. Owing to the raised pressure in the right chambers of the heart, associated with dextraposition of the aorta and a ventricular septal defect, the conditions were favourable for a crossed embolism from thrombi lodged within the right auricular appendix, or the passage of fragments from thrombosis in the systemic veins. No primary focus was found.

In pulmonary atresia life is usually very short; the cases with closed interauricular-interventricular septa all die within the first few months of life. When a defect of the interventricular septum alone exists the patient may live some years. The highest age that I have found in the literature is that of a child of 13, described by Peacock. The duration of life in pulmonary stenosis with closed interventricular septa is relatively high; a patient of Hallemand's died at the age of 57, and the average recorded age for septal defects is 36.

I consider the case described to be one of pulmonary atresia which has survived until the age of 30.

I should like to express my thanks to Sir Arthur Keith and Dr. E. G. B. Calvert for their help, and to the latter for permission to publish this case.

Clinical and Laboratory Notes.

A NOTE ON THE EARLY DIAGNOSIS OF PRIMARY PERINEPHRIC SUPPURATION.

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Perinephric suppuration in a previously healthy individual is not common enough for any one surgeon to have a preponderating experience in its diagnosis, and it is doubtful whether any other abscess can elude detection for so long or pus form in any other situation in such phenomenal amount without seriously jeopardising life.

These remarks are based on eight cases of primary perinephric abscess of which I have kept note.

1. In seven cases the diagnosis was so belated as to cause danger to life, much suffering, and protracted illness.
2. In seven cases the condition was right-sided.
3. Pus was odourless in all; this contrasts with the abscess secondary to empyema, appendicitis, or pyelitis, where the pus is often offensive.
4. In four cases there was a definite history of recent boils.
5. *Staphylococcus aureus* and pneumococcus were the infecting organisms most frequently found.
6. All eight recovered satisfactorily.

It has been said that the diagnosis is usually easy, but the mistakes made include neurasthenia, rheumatism, lumbago, hip-joint disease (four cases), fibrositis, sciatica. In several cases the correct diagnosis was not made until the usual signs of acute suppuration (severe pain, temperatures of 104° F., rigors, and sweats) had figured prominently for several weeks and a large swelling outside the border of the erector spinæ muscle had directed attention to the state of affairs. In two cases where inflammation of the hip-joint was diagnosed the limb was put in extension on an inclined plane; in one instance this was maintained for six weeks and in the other for about six hours.

Signs and Symptoms.

During the preliminary stage the patient feels below par, is easily tired, and has no inclination for any sort of activity. In patients suffering from boils this condition was quite naturally and perhaps correctly ascribed to the boils. There was pain in the loin and often in the hip-joint, stiffness of the lumbar spine limitation of extension at the hip-joint, and bowing of the body to the affected side. This produced a gait aptly described in two cases as "walking like an old man."

Later, with the ordinary accompaniments of acute suppuration, pain became severe and the patient lay on the affected side with the thigh supported in flexion. Any attempt to extend the thigh caused much pain, referred to the hip-joint and down the thigh. Thoracic respiration was markedly accelerated, without the slightest dyspnœa or any signs of pulmonary trouble.

The appearance of a swelling to the outer border of the erector spinæ muscle is not necessarily late. If looked for carefully it may be detected at an early stage; later it becomes prominent and cannot well be missed.

Enlargement of the inguinal glands and the intra-abdominal glands along the iliac vessels was very marked in two late cases.

Diagnosis.

The preliminary stage described is often well marked; in one case it prompted a diagnosis of neurasthenia. Taken in conjunction with later signs it may be of value. Swelling at the outer border of the erector spinæ is probably the earliest reliable sign, but must be sought carefully.

The increased respiratory rate in the absence of signs in the chest, and the enlargement of the iliac and inguinal glands, point to the probability of retroperitoneal inflammation. A leucocyte count during the acute febrile stage should be of value in recognising suppuration. A screen examination of the diaphragm where there is respiratory frequency might be of value, but was not done in any of these cases.

A mistaken diagnosis of hip-joint disease was made in 50 per cent. of this series. This should be ruled out by noting that the patient often lies on the trochanter, and that the joint can be moved without discomfort in any direction so long as the iliopsoas muscle is not tautened.

Pain referred to the hip and thigh, in conjunction with the symptoms described, should direct attention to perinephric suppuration in the same way that pain at the knee may indicate disease at the hip.

A CASE OF GLASS FRAGMENTS IN THE KNEE.

By A. H. Bizarro, F.R.C.S. Eng.,
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The interesting features of this case are (*a*) its clinical similarity with a case of external semilunar injury; (*b*) the absence of infective intra-articular reaction in spite of the presence of dirty glass within the knee-joint for a long time; and (*c*) the curious inframeniscal position of the foreign body.

The patient, a girl of 9, came to consult me on Sept. 18th, 1925, complaining of pains on her left knee and inability to extend it fully.

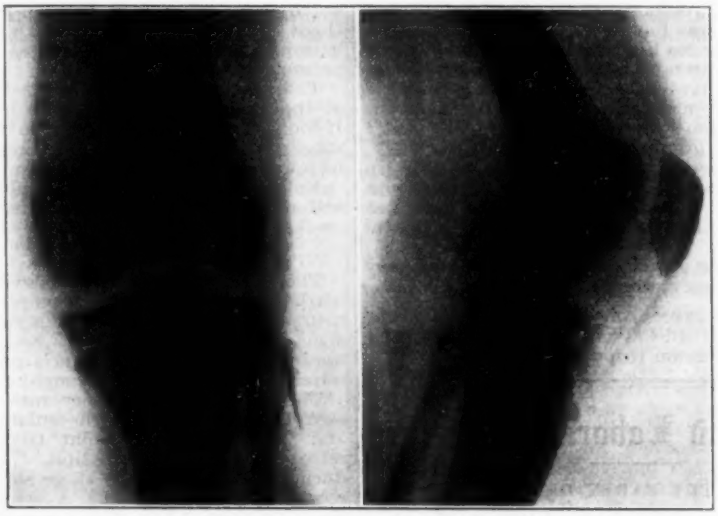
She fell down in her garden on Oct. 20th, 1924, and cut her knee. She apparently fell on the patellar surface of the joint with the leg flexed. There was a wound on the anterior surface of the knee half an inch from the outer border of the patella, and another at the back of the leg, behind the fibular head. These wounds healed up in three weeks. Ever since then the knee has felt "funny," and at times she was apparently unable to walk properly owing to pain on attempting to move the joint. Three weeks before coming to my consulting-room she felt acute pains in the joint, which was swollen for three days. A fortnight later another attack of swelling and pain forced her family to seek advice.

When I saw her the left knee was swollen all over. The swelling was within the articular synovial cavity. The scars corresponding to the wounds above mentioned were irregular and slightly cheloid. There was a spot of tenderness, on pressure, at the articular line, near the outer border of the patellar ligament and corresponding to the external semilunar cartilage. At the back of the joint, and behind the head of

[2] Abbott, Maude E.: Modern Medicine, Osler and McCrae, 3rd ed., 1927.
[3] Peacock, T.: On Malformations of the Heart, London, 1858.

the fibula, pressure elicited less severe pain. The attempt to extend her left leg fully caused severe pain in the joint. There were no signs of abnormal lateral mobility nor any particular line of radiation of the pains on passive or active movement of the knee. There were no constitutional symptoms and the temperature was normal.

A skiagram by Dr. A. D. Boto showed several foreign bodies in and around the joint. There was one, ¼ inch long, between the external condyle of the femur and the outer tibial tuberosity. The lateral skiagram showed a group of three small foreign bodies above and behind, and another smaller one below and behind the first. These four were at the back of the joint and apparently fixed in the structures that limit the capsule posteriorly. Another, triangular in shape and about 1 inch in length, lay at the back of the upper end of the fibula pointing downwards and slightly outwards. The bodies were apparently glass. The patient recollects falling through a greenhouse window.



Radiogram showing glass fragments in the neighbourhood of the knee.

On Sept. 23rd, 1925, under open ether, the joint was opened by Sir Robert Jones's technique. A tourniquet was applied and the leg was kept flexed. A 5-inch incision was made, 1 inch to the outer border of the patella, avoiding the scar. There was some free yellowish synovial fluid. There were no free foreign bodies within the articular cavity. The external meniscus was uninjured and the surface of the crucial ligaments seemed normal. I much regretted not having divided the patella. I then explored under the meniscus with a Cooper's needle. To my satisfaction the linear body seen in the X ray photograph presented at the posterior limit of the external semilunar cartilage. It was triangular and broken at the apex. The Cooper's needle moved it freely to and fro until, after some tedious exertion, it got round into the joint cavity. I did not try to see whether it glided forwards on flexing the leg as I feared air absorption. It was not possible to find the four smaller bodies. The synovial membrane and capsule were stitched with ultratan catgut No. 0. When the anterior wound had been dressed the big triangular foreign body was easily removed by a longitudinal incision through the skin and fat of the popliteal space.

The two pieces of glass proved to be of the cheap window variety. The four smaller pieces left behind apparently belonged to the intra-articular piece which was removed. It seems that the joint motion pushed its sharp end through the posterior ligaments, breaking the four small pieces off its sharp end.

The skin wounds took four months to heal completely. There was no intra-articular reaction, and convalescence was otherwise uneventful. The patient regained full range of painless articular motion and the joint is free from fluid.

My thanks are due to my surgical assistant, Miss Estrada, and to my chief sister, Miss Flora, for the after-care of the case.

A NOTE ON
JAUNDICE FROM FOCAL NECROSIS OF THE LIVER.

By C. E. Newman, M.D. Camb., M.R.C.P. Lond.,
MEDICAL REGISTRAR, KING'S COLLEGE HOSPITAL.

Some time ago, while arranging the notes of cases of catarrhal jaundice on which I had done van den Bergh's test, I was struck by a curious coincidence: all those cases in which the condition had appeared as an intercurrent disease in patients already in hospital fell into one of two categories. They were either surgical or obstetric cases which had been under chloroform and had been to some extent septic. They were all diagnosed as "catarrhal jaundice" or "ascending cholangitis," but it seemed so odd that these conditions should be confined to two such limited groups in a general hospital that a more searching investigation was undertaken.

Earlier cases included a pneumococcal septicæmia following a mastoid operation, an appendicitis with peritonitis, an operation for hernia followed by rigors, and a forceps delivery, in all of which chloroform had been used, but the notes are not sufficiently detailed to justify inclusion. The following are the details of the more fully investigated cases:—

Case 1.—Female aged 44. Operated on under chloroform and ether for carcinoma of the breast on May 29th, 1925. On the 31st she was feeling ill (she had vomited a good deal after the anæsthetic), and had acetone and bile in the urine. Her conjunctivæ were distinctly yellow, and the van den Bergh test on the same day gave a prompt reaction of 21 units. The fæces contained bile. Next day there was definite systemic jaundice. By June 4th the jaundice had almost disappeared and there was only a trace of bilirubin in the urine, but no bile salts. She recovered completely.

Case 2.—Female aged 39. Delivered of a macerated fœtus under chloroform on Oct. 12th, 1925. Wassermann reaction positive. She had a high intermittent temperature with rigors until the 20th. The blood culture was unfortunately contaminated. She became jaundiced and vomited on Oct. 19th, with definitely pale stools and bile in the urine. The van den Bergh test on the 22nd gave a prompt reaction and 6·5 units. The jaundice faded slowly as her general condition improved, and she went out well.

Case 3.—Female aged 16. Operated on for tonsils and adenoids on Feb. 22nd, 1926, and on the 28th for mastoiditis, having eaten very little carbohydrate in the meantime. Chloroform was used on both occasions. She was very ill after the second operation, with a high swinging temperature and much vomiting. On March 2nd she became jaundiced and delirious, with much acidosis. There was no bile in the urine. The van den Bergh test gave a prompt reaction and 7 units. Bile appeared in the urine for the first time, and in large quantities on the 5th. A hæmolytic streptococcus was isolated from the mastoid, from an erysipelatous inflammation on the arm round a needle prick, and from a septic arthritis of the ankle-joint which developed on the 17th. She was treated by immuno-transfusion and an autogenous vaccine, and ultimately recovered. The jaundice faded on the 19th.

Case 4.—Male, aged 49, admitted to hospital on July 24th, 1926, with a three weeks' history of pain in the back and rigors, intensely jaundiced, and with every appearance of septicæmia. The abdomen was distended, with tense recti, and tenderness was felt over the splenic area. The

urine contained blood and albumin, but no bile, and there was a polymorphonuclear leucocytosis. The van den Bergh reaction on admission was prompt, with 3·8 units. Bile salts appeared in the urine next day, and a considerable quantity of bile pigment. Death took place from septicæmia of unknown origin three days later. Blood taken by heart puncture immediately after death gave a prompt van den Bergh reaction and 3·2 units.

At the post-mortem examination a huge perinephric abscess was found, with abscesses in the kidney from which the *Staphylococcus aureus* was isolated, and a right upper lobar pneumonia. The liver was large and very fatty, and the microscopic sections gave a clue to the pathology of the jaundice. The bile-ducts were apparently quite healthy, but the portal spaces were slightly infiltrated with round cells and polymorphonuclear leucocytes, not in especial relation either to the portal veins or the hepatic arteries. The whole liver was full of small, irregular, scattered areas of degenerated cells, many of which had gone on to complete necrosis. These areas were mainly in the outer and middle zones of the so-called lobules. Where necrosis had taken place the bile capillaries in the centre of the columns of liver cells were thrown up against the blood capillaries and separated from them only by their endothelial lining and possibly the remains of the cell walls of the disintegrated liver cells. That is to say, there was nothing separating the two but a permeable membrane, through which bile pigments and salts could diffuse from the higher concentration of the bile to the lesser concentration of the blood, thereby producing a blood serum similar to that in cases of obstructive jaundice, and explaining the prompt van den Bergh reaction without invoking a hypothetical mechanical obstruction by catarrh or inspissated bile. There was, indeed, no evidence of obstruction, macroscopic or microscopic.

CASE 5.—Female, aged 28, who had miscarried of a three months' child on July 31st, 1926, was admitted with tetanus on August 4th. She was given chloroform daily to control the spasms from the 5th to the 10th, and serum treatment. On the 12th she became jaundiced and had bile in the urine, and the liver was enlarged. She never vomited. The van den Bergh reaction was prompt, with 11 units. On the 14th, when the jaundice was just beginning to fade, the lævulose tolerance test gave the following result:—10 A.M.: blood-sugar, 0·109, 30 g. lævulose given fasting. 11 A.M.: blood-sugar, 0·150; 11·45 A.M.: blood-sugar, 0·150. Blood taken from the uterine cavity was sterile. The jaundice was last visible on August 17th, and the last trace of bile in the urine was found on the 24th. She made a good recovery.

CASE 6.—Female, aged 23, admitted in labour on August 24th, 1926. She had been vomiting for 48 hours previously and had eaten nothing, but had shown no other sign of pregnancy toxæmia. She was delivered on August 25th, had a post-partum hæmorrhage, and was under chloroform for an hour and a half for the repair of a torn cervix. She had also had a little chloroform during labour. She vomited a great deal next day and was obviously very ill. Fifteen hours after delivery she was jaundiced; the urine contained a little acetone and albumin, but no bile, and the van den Bergh test gave a prompt reaction and 7 units. On August 27th she vomited less, but was very collapsed and began to show petechial hæmorrhages in the mouth. Next day she died, with œdema, fibrillary twitchings of the muscles, and air-hunger. Just before death the urine contained a little albumin, but no acetone; unfortunately no tests for bile were applied.

The post-mortem examination revealed many petechiæ under the serous membranes, and bile-stained peritoneal and pleural exudates. The kidneys were engorged and a little bile stained. The liver weighed 2 lb. 11½ oz., and was completely and uniformly fatty in appearance, but with a peculiar rubbery consistency and no bulging of the liver substance over the capsule. There were no interstitial hæmorrhages and the capsule was tense. The sections showed gross fatty change, most of the cells being full of fat, and in the zone of the lobule intermediate between the portal and efferent veins the change had gone on to complete patchy necrosis, the appearance being very similar to that in Case 4, but more intense and different in distribution. The only healthy cells were those related to the portal veins. In this case, also, there was no macroscopic or microscopic evidence of obstruction to the bile-ducts. Blood taken post mortem gave a prompt van den Bergh reaction and 10½ units.

These two cases both present the syndrome of jaundice giving the prompt van den Bergh reaction without obstruction, but with focal necrosis in the liver, one of them being caused by sepsis alone and the other by chloroform alone. It therefore seems more than probable that those other and commoner cases, in which both agents play a part, have a similar pathology. Unfortunately, since no such case has yet come to autopsy, I have had no opportunity of examining liver sections.

In one more case necrosis caused by chronic venous engorgement also produced, apparently, a prompt reaction type of jaundice.

CASE 7.—Female, aged 32, an old-standing case of mitral stenosis and adherent pericardium of rheumatic origin, was admitted on June 22nd, 1926, with severe back-pressure signs and definite jaundice. She had a prompt van den Bergh reaction and 6·5 units. At the post-mortem examination were found an advanced nutmeg liver, all the signs of cardiac back-pressure, and a bile-stained ascites. There was no obstruction to the bile-ducts and the fæces were of normal colour. The liver sections showed extreme venous congestion and fatty degeneration, and considerable necrosis around the efferent veins.

Conclusions and Summary.

Chloroform and sepsis, either alone or, more commonly, acting in conjunction, can cause a parenchymatous degeneration of the liver. This process may go on to actual necrosis of liver cells, and there seems to be a group of cases of jaundice, clinically and biochemically "obstructive" in type, in which there is no obstruction to be found post mortem, and in which the jaundice appears to be due to absorption of bile into the blood stream through the capillary endothelium in the areas of necrosis. These cases fall into the "toxic-infective" type of jaundice, and I believe that this mechanism would explain the pathology of the whole of that group more adequately than any other theory. The same process explains the "obstructive" type of jaundice which occasionally appears in the terminal stages of cardiac failure. A point of practical importance is that all the cases described above, in which jaundice followed chloroform administration, had been "prepared" for the anæsthetic by starvation and purging. Considering how susceptible the liver is to poisoning when depleted of glycogen, it would seem wise to ensure an adequate glycogen store by previous administration of glucose, rather than to run an additional risk by starving the patient.

I should like to thank Sir Charlton Briscoe, Sir Lenthal Cheatle, Mr. Arthur Cheatle, Dr. C. F. T. East, Mr. W. Gilliatt, and Mr. A. C. Palmer for their kind permission to publish these cases.

References.—McNee, J. W.: Quart. Jour. Med., 1923, for general discussion of modern views on jaundice. Andrewes, F. W.: Ibid., 1924, xviii., 32, reference to Eppinger's views on focal necrosis in catarrhal jaundice. Macallum: Text-book of Pathology, Chap. xvi., on toxic necrosis in the liver.

Medical Societies.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.

RELATION OF SYPHILIS TO MALIGNANT CHANGES.

A MEETING of this Society was held in London on April 27th, with Sir HUMPHRY ROLLESTON, the President, in the chair.

Dr. ARCHIBALD LEITCH spoke on Syphilis in Relation to the Ætiology and Diagnosis of Malignant Disease. He said the manifestations, complications, and sequelæ of syphilis were so varied that it was not surprising to find that disease advanced as a predisposing, exciting, or contributory factor in malignant disease, especially as so comparatively little was known as to the causes of the latter. The idea seemed to be that syphilis left behind it a tissue the resistance of which had been so lowered that it easily became the seat of cancer. There were still some who expected that the cause of cancer would prove to be a parasite. The Wassermann reaction was largely an impersonal criterion, but not altogether so, though the proportion of borderline cases was admittedly small. The fact that the

Wassermann reaction was positive in a particular patient did not necessarily mean that a particular lesion found in that patient was syphilitic in nature. The statement was often made that malignant disease had supervened on the site of an old syphilitic ulcer, but he wondered whether that was an instance of an oft-quoted alleged occurrence. A French author put the matter very definitely by declaring that "syphilitic persons are potential candidates for cancer, and live for ever beneath a sword of Damocles." Dr. H. J. B. Fry, of the Cancer Hospital, London, had taken 761 cases of cancer and tested them for syphilis, comparing this with 720 non-cancerous cases in the same hospital practice. Of the former 8·7 per cent. and of the latter 10·7 per cent. gave a positive Wassermann reaction. This did not seem to make the relationship of the two diseases very definite. The case seemed to be strengthened, however, by taking each organ or tissue of the body separately, as Dr. Fry had done. For example, in cancer of the cervix and uterus, 13·3 per cent. gave a positive Wassermann reaction; in cancer of the buccal cavity 13·2 per cent. were positive, while in cancer of the tongue 31 per cent. were positive. Leucoplakia was frequently present in epithelioma of the tongue. Was syphilis the causative factor in this leucoplakia which later became malignant? Bruck had done the Wassermann reaction in 12 cases of leucoplakia, and had found it positive in 10. Leucoplakia of the vulva was said to become malignant almost invariably. Figures for the breast failed to show any connexion between the two diseases, and only 3 per cent. of cases of cancer of the rectum were syphilitic. Syphilis of the rectum was, in fact, a very rare disease. In the series 15·4 per cent. of cases of malignant disease of the stomach gave positive Wassermann tests. The late Sir C. Ryall, who had a large experience as surgeon to the Cancer Hospital and the Lock Hospital, found that 80 per cent. of cases of lingual cancer gave a history of syphilis, a figure which closely approximated to that reported by Fournier. Ryall believed that smoking in a person with a syphilitic tongue was the cancer determinant. It was really a vicious circle. Dr. Leitch referred to experiments of his own on tobacco extracts, and quoted the experiments of Brown and Pearce in which carcinoma had developed on syphilitic lesions in rabbits.

Discussion.

The PRESIDENT said his own impression was that squamous-celled carcinoma seldom developed as a result of chronic syphilitic lesions, and even less often than on lupus. Dr. Leitch's figures suggested that squamous-celled carcinoma was more prone than the more highly differentiated carcinoma to occur in syphilitic subjects—e.g., there was a contrast between squamous epithelioma of the tongue and malignant disease of the stomach. Was it possible that syphilis more efficiently destroyed the activity of columnar than squamous cells? He agreed that cases regarded as syphilitic stricture of the œsophagus usually had squamous-celled carcinoma. It would be interesting if Dr. Leitch could give the figures for chimney-sweep's cancer. McNee had brought forward two cases in which gumma of the stomach imitated carcinoma, and Sir Humphry had always thought that chronic ulcer of the stomach might occur more often in persons with syphilitic endarteritis than in ordinary people.

Colonel L. W. HARRISON said that he had always considered that the binding factor was chronic irritation. It was well known that syphilis tended to recur on a damaged spot, as was well shown by chronic syphilitic glossitis. In the past, the latter condition was less commonly seen in women, because men more often irritated their mouths by smoking and strong alcoholic drinks. This difference might well vanish with women's changing habits. In the case of cancer of the tongue, it was easy to understand the stages: syphilis, sensitive areas, the irritation of tobacco, perhaps a rough pipe—and, on such areas, cancer. One of the best illustrations he knew of this irritative cause of cancer was furnished by the Kashmiris, who carried a small fire-basket pressed against the abdomen for warmth in the mountains. These people frequently developed cancerous ulceration on the abdominal wall. He thought it was generally agreed that there was a close relationship between syphilis and cancer of the tongue. The subject of syphilis of the cervix had not been very fully worked out.

Dr. DAVID NABARRO questioned the wisdom of relying on the Wassermann report as infallible evidence of the existence of syphilis, as he frequently received a negative report concerning the fathers of children known to be syphilitic. In his own clinic 70 per cent. of the fathers of syphilitic patients were reported to have a negative Wassermann.

Dr. F. C. DOBLE said that epithelioma of the lower lip was quite common in Cornwall, a county where syphilis was very rare. In 14 cases in which the cancer was excised and examined the blood Wassermann was negative. In Cornwall the cancer was attributed to the fisherman's habit of holding the lines in the mouth. The irritation might be due to the tar on the lines or to the pull on them by the fish when hooked.

Dr. LEITCH replied.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.

AT a meeting of this Society held on May 3rd Dr. DONALD HALL, the President, took the chair, and Dr. C. G. SCHURR read a paper on

Myopia in Childhood.

He said that the four theories most widely held about the causation of myopia could be considered under two headings, Posture and Predisposition. Under the first came (1) excessive convergence, and (2) the effect of gravity; whilst factors of predisposition were: (1) a small ciliary body, and (2) diminished resistance of the sclera. An examination of the first three of these showed that in the end they were dependent on the fourth. Without an abnormal distensibility of the sclera they could none of them be deleterious in their action. Heredity might undoubtedly be a contributory cause of diminished scleral resistance, but it did not account for those cases, by no means uncommon, in which there was no history of myopia in the family, or indeed even a history of hypermetropia. An investigation of the height and weight curves of myopic children in the Barclay Home, Brighton, suggested that there was a definite relationship between myopia and metabolism. A series of graphs of contrasting cases showed that where myopia was found to be increasing, there was always a falling-off in the weight and height ratio compared with the normal. This condition was not found where the myopia was stationary, even if corneal nebulæ were present. The material so far available had not proved sufficient upon which any firm conclusions could be based, but it afforded ground for interesting speculation. Dr. Schurr concluded by considering the question of the future of children who attended myope schools. The establishment of workshops, where they could compete with persons of like disability, seemed more reasonable and less wasteful than sending them out to compete with normal persons. The early detection of myopes was an important duty of medical officers in charge of schools, and practitioners could give useful advice on such matters as suitable exercise, food, sleep, and the choice of profession.

LEAGUE OF NATIONS PUBLICATIONS.—The department of Messrs. Constable and Co. (10, Orange-street, London, W.C.), which is concerned with the issue in this country of the official publications of the League of Nations, has been placed under the charge of Mr. P. Savary, who has been associated with the information section of the League for over four years.

CONFERENCE ON RHEUMATIC DISEASES.

BATH, MAY 10TH–11TH.

THE Conference on Rheumatic Diseases held in Bath last week came to a satisfactory conclusion on Friday, May 11th, and all who took part in it were unanimous about two things—that as a business meeting it had been a marked success, and that the opportunity for fellow-workers to meet, afforded by the amenities of the City that had issued the summons, was unrivalled. The spirit in which those amenities were accepted by the congressists showed their full and unanimous appreciation of their reception. The Conference closed with a unanimous vote of thanks to Mr. Edric Chivers, the Mayor of Bath, alike for the profuse hospitality granted by the City and for his own personal endeavours to carry out the objects of the Conference. The passing of the vote of thanks to the Mayor was accompanied by an acknowledgment of the particular debt of gratitude owed to the Lady Mayoress, Mme. Sarah Grand, and to the Organising Committee, Dr. F. G. Thomson, Dr. Rupert Waterhouse, Dr. R. G. Gordon (President of the Bath Branch of the B.M.A.), Dr. Vincent Coates, and Mr. John Hatton, the director of the Royal Baths, who acted as organising secretary.

THURSDAY, MAY 10TH.

The Conference was opened by a Civic Welcome from the Deputy Mayor, after which Sir GEORGE NEWMAN (Chief Medical Officer to the Ministry of Health) delivered the brief Presidential Address to the Conference which we were able to publish last week. Immediately thereon the Conference got to business, the first Session, devoted to the Social Aspects of Rheumatism, being opened by the President of the Session, Lord DAWSON.

FIRST SESSION—SOCIAL ASPECTS.

After a few introductory words from Lord DAWSON, the first paper was read by Sir WALTER KINNEAR (Controller to the Insurance Department of the Ministry of Health), who dealt in a clear and interesting manner with the problem of the cost to the country of industrial rheumatism. This paper, which is published on p. 1001 of this issue of THE LANCET, revealed what a burden both to themselves and to the community are our large number of rheumatic subjects, and proved how urgently needed was the attempt of the Conference to arrive at some definite conclusions regarding ætiology and the appropriate methods of prevention and relief.

Sir Walter Kinnear was followed by Dr. H. B. BRACKENBURY (Chairman of Council, B.M.A.), who spoke on the need for the organisation of the facilities for treatment for the whole population. These facilities included: (1) the discovery and elimination of any infected foci; (2) the administration of drugs; and (3) the use of various physical agencies and methods. "The right case must be got to the right place for the right purpose." Dr. Brackenbury referred to the work which had been done in Holland and in post-war Germany towards this end. He gathered that these continental organisations were not by any means perfect but that we had something to learn from their experience. In this country specialist advice was only at the disposal of a small percentage of insured persons, and it should be made part of the statutory medical benefit as soon as possible. Two practical schemes for the organisation of rheumatic treatment were before the public in this country—viz., that of the British Red Cross Society and that of the British Spa Federation. In order to secure the hearty support of the medical profession these schemes should be united and should conform to certain requirements—e.g.: (1) no patient should be treated except on the recommendation of a medical practitioner; (2) patients, who could easily obtain the requisite treatment should be refused; (3) the conditions should envisage the possibility of a patient obtaining advice at the consulting-room of a specialist instead of at an institution; and (4) there should be suitable opportunity for practitioners to observe and obtain experience of the methods employed and their results. Such organised schemes would afford opportunities for the clinical and pathological observation and research which were essential for success in combating this baffling and obstinate national scourge.

Dr. J. VAN BREEMEN (Holland), Hon. Secretary, International Committee on Rheumatism, spoke on the types of rheumatic disorders which were most prevalent in Holland. He said that official statistical data on rheumatism were an unknown quantity in Holland, and that the scientific study of the social campaigns against rheumatism were still in their infancy. He submitted a table with regard to 832 male and 1046 female rheumatic patients, attending the Rheumatism Consulting Bureau at Amsterdam during 1927, classified according to the type of their disease. He thought that acute rheumatism was comparatively rare in Holland, as also heart disease and chronic joint disease following acute rheumatism. The number of children, who had died in Holland of acute endocarditis and myocarditis between the ages of 5 and 14 appeared to be much less proportionately than the corresponding fatalities in Great Britain. Gout was also rare in Holland, though the old French Huguenot families often showed the arthritic diathesis in a pronounced degree. He found that affections of the knee-joint were strikingly more frequent in women than in men, and that the shoulder-joint was more frequently affected in men. Arthritis deformans, the equivalent of rheumatoid arthritis, was not very frequent in Holland, and his impression from studies in England was that the cases in England were more numerous and more severe. Cases of sciatica over the age of 50, sent to him, were often really osteo-arthritis of the hip-joint. Arthritis of the spine was seldom recognised and was more common than was formerly thought, though its prognosis was less grave. The strict separation of spondylitis deformans and rhizomelic spondylosis (complete vertical ankylosis) was frequently impossible. Arthritis of the spine generally occurred in men and he had never seen the rhizomelic forms in women. He considered that the influence of occupation in producing rheumatic affections would be one of the great medical problems of the future. The statistics of the "Councils of Labour" (Raden van Arbeid) showed that only about one-tenth of the working people invalided by chronic rheumatic diseases were medically treated. He hoped that within the next few years it would be possible to furnish official statistics with regard to all rheumatic affections in Holland.

Dr. J. ALISON GLOVER gave particulars from the Ministry of Health's inquiry, which had reference to a sample population of about 90,000 insured persons, and indicated that the percentage of the total sickness caused by rheumatic diseases was about 16·8 for males and 14·4 for females. The lower percentage among women was due to the younger age of the insured women, owing to matrimony and other reasons. The Leipzig statistics, published in 1907, seemed to indicate that rheumatic diseases were quite as common in Germany as in England, and this impression was confirmed by the more recent figures given by Sommerfeld for Berlin. The fact that the incidence of acute rheumatism was undoubtedly declining in our country was one of the bright spots of the problem. Dr. Lambert had shown that this decline was also occurring in the experience of the New York hospitals. The figures for our Navy from 1907 to 1923 showed a great decline in rheumatic fever, out of all proportion to the slight fall in the incidence of tonsillitis. These figures, however, referred to frank rheumatic fever, and gave no idea of the incidence of other manifestations of the rheumatic infection in children, which were almost equally important from the point of view of the

production of heart disease. Probably 1 in 50 of the children attending the public elementary schools required observation and periodic examination on account of some rheumatic manifestation. Dr. Glover, who showed diagrams which indicated the attack-rate at various ages in both sexes from fibrositis and arthritis, referred to the marked effect of occupation upon the incidence of rheumatic diseases and specially referred to the observation of van Breemen that every special trade had its own rheumatic "deviation." So far our Ministry's investigation had only brought out the fact of the special incidence of osteo-arthritis upon the workers in the heavy metal trades. The statistics of hospitals showed that they were only able to admit and treat a very small percentage of the cases of chronic arthritis, and further institutional treatment was obviously needed to provide accurate attention to septic foci, and the intensive local and physical treatment which might be given at a spa hospital or an out-patient clinic. The number of insured patients suffering from chronic arthritis was only half that of those who suffered from fibrositis, but the longer period of disablement caused by the former made the two equal in causing disablement. Thus the drain upon the National Health Insurance funds for sickness and disablement benefit caused by rheumatic diseases was at least one-seventh of the whole, one-half of which was due to chronic arthritis.

Dr. R. G. GORDON (Bath) laid emphasis on the fact that in almost every case of chronic rheumatic disease the skin is at fault in some way or another. Sweat secretion depended upon the sensory stimuli impinging on the skin, a good cutaneous blood-supply, and proper endocrine balance. A humid cold atmosphere made adequate sweating difficult. People who had spent their lives in a tropical climate when they returned to this country had lost their power to sweat, and frequently developed fibrositis and panniculitis. Fatigue was an important factor. As an example of local strain, we had the lumbago of gardeners, the fibrositis of the shoulders and backs of miners, and the osteoarthritis of the hips in those who had ridden and hunted much, but general fatigue markedly influenced the endocrine system and through it the action of the skin. In treating chronic rheumatism it was necessary to find the fatigue limit of the patients and to keep them within it. Emotion, worry, and depression also affected the endocrine system and the action of the skin.

Dr. HANS JANSEN (Copenhagen) said there were no statistics available as to the relative prevalence of rheumatic diseases in Denmark.

A further important paper was read to the Session by Dr. REGINALD MILLER, which will be found on p. 1005. This paper dealt with the influence of environment on rheumatic infection in childhood, and its conclusions formed the topic of comment in many of the communications which followed.

Lord DAWSON closed the debate with a short reflection on the general messages conveyed by the speakers. Alluding to the incidence of fatigue, he said that everyone, and not only medical men, recognised the magnitude of the evil caused by chronic rheumatism among workers, adding that it was necessary not merely to think of the many days of sickness and the heavy loss of life, but also to think of its affecting the quality of life. It was clear that environment played a prominent part in the production of rheumatism and the allied sequelæ, though occupation played its part, as had been shown by the speaker who had pointed out how metal workers were particularly subject to rheumatic diseases. And while he deplored the idea that they should be characterised as poverty diseases only, he urged the importance of the improvement of housing, of the methods of domestic life, of good clothes, and of the open-air life. While strongly advocating the value of recreation, and of playing rather than watching games, and of guarding against anything like fatigue, he ventured to raise the issue as to whether the rigid idea of the eight-hour day was wise, and thought it might be better to have occasionally a longer working day, properly alternated with a shorter, provided the average of the eight-hour day was not exceeded during the week.

FRIDAY, MAY 11TH.

SECOND SESSION—CAUSATION.

The second session of the Congress was opened punctually at 9.30 A.M. by Sir HUMPHRY ROLLESTON, who delivered the following

Presidential Address.

To begin with, he asked the Conference to consider what were the connecting links or common ætiological factors in the rheumatic disorders. At one end of the scale was acute rheumatic fever whilst at the other was osteo-arthritis, largely a degenerative disease. Between these two extremes was a chain of gradual transitions, but clinically the main distinction was between the acute and subacute forms of disease, prone to damage the heart and to react to salicylates, and the chronic forms, permanently damaging the joints, but seldom, if ever, the heart, and irresponsive to salicylates. Did chronic joint inflammation develop often enough in persons formerly attacked by rheumatic fever to suggest that the two diseases were due to the same infection, or was the sequence more credibly explained by the supposition of a general arthritic diathesis? The characteristic lesion of rheumatic fever, including chorea, was the formation of nodules, large in the subcutaneous tissues, submiliary in the heart. These also occurred in rheumatoid arthritis, but had rarely been reported in other disorders. The submiliary nodules in the myocardium (often called Aschoff's bodies) were generally regarded as pathognomonic of acute rheumatic infection, though Geipel and Butterfield dissented and Cowan and Ritchie stated that they occurred in most of the acute infections. Nodules of this kind were found in the pericardium, cardiac valves, synovial membranes of the joints; Coombs had described changes in the aorta and nodular periarteritis (1908–09), and Klotz has commonly found arterial lesions in acute rheumatism—an inviting subject for further research.

According to Coates and Coombs the histological structure of the subcutaneous nodule in rheumatoid arthritis and Still's disease was the same as in Aschoff's submiliary nodules in the myocardium.

Subcutaneous nodules had been often found in rheumatoid arthritis and osteo-arthritis, which led Hawthorne to say in 1912 that "either rheumatoid arthritis is rheumatism or the development of fibrous tumours in the subcutaneous tissues is not a special note of rheumatism." But Sir Humphry Rolleston had not found any evidence of submiliary nodules in the heart in chronic rheumatoid arthritis. Fibrositis, which was the non-arthritic form of chronic rheumatism and might have the local habitation and name of panniculitis, was also accompanied by nodule-formation, though in this condition the thickenings were not so histologically characteristic as the rheumatic nodule. As Stockman and Weber had pointed out, panniculitis, like fibrositis and fibromyositis, might arise from various causes.

The much debated streptococcal nature of acute rheumatism, first raised by Poynton and Paine in 1900, had, in spite of much criticism, been steadily gaining ground. Recently Small had described as the specific cause a non-hæmolytic streptococcus, differing from the *viridans* group in its cultural characters, under the name of *Streptococcus cardio-arthritidis*. His specific treatment with antiserum and vaccine of 72 acute rheumatic, 25 choreic, and 40 chronic rheumatoid cases had given encouraging and significant results. There was a widespread impression that chronic rheumatoid arthritis and its allies were due to streptococcal infection, though Warren Crowe incriminated *Staphylococcus albus*, type D, for rheumatoid arthritis and streptococci for osteo-arthritis and non-articular rheumatism. It might be argued that the various members of the rheumatic diseases were streptococcal in origin, their clinical and structural

differences depending on (*a*) variations in the "seed," and (*b*) inborn or acquired differences in the soil—namely, the constitution, endocrine, and other factors. The non-infective origin of chronic articular lesions, such as metabolic anomalies in alkaptonuria, in the trophic (e.g., Charcot's arthropathy), and psoriatic forms might still be a matter for discussion, and in these, at any rate, it seemed that, if there were bacterial invasion, it was secondary and subordinate in importance. In both the acute rheumatic and the chronic rheumatoid forms hereditary constitution or an "arthritic diathesis" must be considered to play a part. Inadequacy of the thyroid had been specially put forward, but ovarian and pluriglandular inefficiency had also been regarded as responsible. Pemberton had insisted on the low sugar-tolerance of chronic arthritics and ascribed this to diminished circulation of blood in the muscles. But the possibility should be borne in mind that both the disturbed endocrine function and the arthritic manifestations were due to infection; for example, the correspondence between the geographical distribution of endemic goitre and of rheumatoid arthritis (McCarrison) might be explained as different results of an underlying infection. In describing the loss of sulphur in chronic rheumatic arthritis Cawadias concluded that the toxic and infective, and even physical factors, such as damp, responsible for rheumatoid arthritis first acted on the organs—liver, thyroid, and autonomic nervous system—regulating metabolism. On the whole it might be reasonable to suggest that varying degrees of diminished constitutional resistance of the fibrous tissues or of sensitisation to infection on the one hand, and on the other hand the action of different kinds of streptococci might explain the different clinical manifestations seen among the diseases grouped for convenience under the heading of rheumatism.

Dr. C. WILFRED VINING (professor of children's diseases, University of Leeds) described an investigation carried out in Leeds, by Dr. Wear, by the children's almoner of the infirmary, Miss Finlay, and others, which confirmed his view that the frank rheumatic child is a child suffering from toxic debility with added rheumatic infection. He gave particulars of the symptoms of the "toxic debility" children, including nervous instability, limb pains, headache, listlessness, and anæmia, and pointed out that some 25 per cent. of the child population belonging to the social sphere from which rheumatism chiefly comes show these phenomena more or less. These "toxic debility" children exhibit certain intestinal symptoms associated with mucus in excess and membranous material in the stools. The actually rheumatic children suffer in the same way. Prof. Vining was impressed with the similarity of the symptoms shown by these sufferers and by McCarrison's monkeys and pigeons fed on diets deficient in vitamin B. He considered that a dietetic theory explains why rheumatism does not appear until 4 or 5 years of age—that is to say, the dietetic deficiency takes some years to break down the defence. He found the family incidence of both toxic debility and rheumatism easily explained by the family diet. In Leeds he had found nothing to support the belief that damp plays an important part in rousing the rheumatic infection to activity. On a recent visit to Holland he understood from Dutch medical men, who were also school medical officers, that, while chorea, joint rheumatism, and cardiac affections were rare in Holland, enlarged tonsils and adenoids were extremely common. He concluded that most children who develop clinical rheumatism have a previous defective health history for months or years, which is brought about by prolonged dietetic deficiency, either in vitamin B or in protein in conjunction with excess of carbohydrate, or possibly by both these factors. He explained the sequence of events by dividing the elementary school-children into four main groups: (1) healthy children, comparable to those in other social spheres; (2) children who are beginning to experience the results of the deficient diet and are under weight, with toneless tissues and alimentary canal disturbances; (3) children with added symptoms of toxæmia; (4) children with clinical rheumatism, acute or subacute, the dividing line between groups (3) and (4) being one of massiveness of dose, repetition of dose, or lowering of resistance by some factor or factors unknown. He maintained that if his conception is right we shall not prevent rheumatism by concentrating on damp houses and the removal of tonsils and adenoids, but rather by the provision of a well-balanced diet from infancy onwards. Prof. Vining did not rule out the possible effect of damp houses nor deny that the tonsils may be the portal of entry, but held that an exclusive throat ætiology is not warranted by the evidence at our disposal.

Dr. H. DINGWALL FORDYCE (hon. physician, Royal Liverpool Children's Hospital) expressed himself as largely in agreement with Prof. Vining as to the importance of a proper diet from infancy onwards. Although heredity might be of some importance, we were granted a postnatal interval of opportunity, lasting for several years, in which to develop effective prophylactic measures. Dr. Fordyce gave, as three important predisposing factors, instability of the nervous system, digestive disorder, and weakness of lymphoid defence, and sketched some of the home conditions likely to conduce to these factors. He considered that child welfare work, by its educational influence, had been one of the chief causes of the decline of acute rheumatism. A close cooperation was needed between the administrators and the clinical physicians. If we had at our command more beds in country hospitals and suitable residential schools he felt that the results would be remarkable.

Dr. CAREY F. COOMBS (physician, Bristol General Hospital), in a review of the bacterial position, submitted evidence that rheumatic fever is an infection rather than an intoxication, and that the disease is due to the invasion of the brain, joints, heart, and subcutaneous tissues by streptococci, which are borne thither by the blood stream. He thought we might accept the view that the tonsil is certainly, and the intestinal mucosa possibly, to blame for admitting this virus into the systemic circulation. The type of infection in childhood was, he held, best described as a series of raids, many of which are stealthy—the organisms linger outside the circulation and revisit the circulation from time to time. Dr. Coombs went on to refer to the work of Homer Swift and others which suggested that rheumatic patients showed a group sensitiveness to streptococcic toxins. This would explain why *Streptococcus viridans* succeeded in implanting itself on valves already injured by the rheumatic streptococci, and also the remarkable relation between scarlet fever and rheumatic infection. In spite of the fact that rheumatic infection in childhood created a form of sensitisation, a tide of immunity set in after a certain age, and possibly 30 per cent. of affected children recovered and acquired this immunity. The fact that the injuries inflicted conformed closely to a certain pattern was due rather to constancy on the part of extraneous influences than to the specificity of the streptococcus. The difference between the naturally acquired lesions in man and the lesions caused experimentally in animals was probably due to these extraneous influences. In a child the infection appeared to enter by a succession of small doses, perhaps through a mucous membrane, while in the animal, infection, perhaps enhanced by sojourn in the human body, was injected directly into the circulation. The latent chorea described by R. Miller, the granules found by V. Coates and Thomas, the pre-rheumatic state of which Vining has written, and the mitral stenosis only discovered in adult life were all explicable by the escape into the body of minute doses of bacteria.

Dr. RALPH STOCKMAN (professor of materia medica and therapeutics, University of Glasgow) dealt with the causation of fibrositis and panniculitis, which he described as really the sequelæ of various preceding diseases. He illustrated by lantern slides the gradual formation of a definite fibrous tissue from the loose soft texture with a sero-fibrinous matrix, resulting from the exudation of serum and proliferation of

fibroblasts, the common reaction to bacterial and chemical irritants. What happened in muscular rheumatism and panniculitis did not differ essentially from the histology of infected wounds with painful adhesions, thickened pleura, and cirrhosis of the liver. In fibrositis the irritant was most commonly a bacterial toxin produced on the site by a colony of microbes or possibly carried from a distance by the blood stream. Fibrositic patches might affect one area of the body only or be widespread, and in some localities took the form of pea-like masses with a core of inflamed fibrous tissue surrounded by fat. In the early stage these little swellings might disappear or be dispersed by massage. He regarded cold and wet as exacerbating factors of lesions already present rather than as causes of chronic rheumatism. He did not consider changes in the activity of the endocrine glands a cause of panniculitis. Increase in adiposity was apt to occur at the menopause and tension or pressure increased the sufferings of women who were already the subjects of subcutaneous fibrositis.

Dr. W. LANGDON BROWN (physician to St. Bartholomew's Hospital) dealt with the endocrine factor and thought we might confine our attention to the thyroid and ovaries. He agreed with the pioneer Hertoghe, whose recent death was a real loss to the profession, that it was most important to look for indications of hypothyroidism. He also agreed with Llewellyn that hyperthyroidism might be operative and that thyroid instability was the important thing. There might be a background of hypothyroidism with spurts of hyperthyroidism. Lack of iodine was a feature in both. Tonsillar sepsis was associated with thyroid derangement. Studies of the blood-sugar in rheumatism would throw light on the endocrine factor. The thyroid gland mobilises the sugar into the blood stream, whilst insulin leads to the storage of sugar as glycogen in the liver and muscles. Insulin might be useful for rheumatic hyperpyrexia. Thyroid inadequacy might be the inherited factor in rheumatism. Iodine was useful both for rheumatism and goitre. The thyroid and tonsils were only factors—not the whole story. The ovaries might have an effect at puberty and the menopause and act through the thyroid. The condition of the thyroid was the chief endocrine factor in rheumatism and rheumatoid affections.

Dr. GEOFFREY HADFIELD (demonstrator of pathology, University of Bristol) discussed the specificity of the tissue reactions in rheumatic diseases, and referred to the subcutaneous millet seed granules of Vincent Coates. These, he said, were composed of proliferating reticulo-endothelium, were rich in newly formed capillaries, and presented similarity to what was supposed to be the primary tissue reaction in the infective arthritic group. The granules were the classical nodules in miniature. This reaction, while not so spectacular as the giant-cell system of tubercle, was as constant as that of gumma formation. There was little difference between the early skin nodule of infective arthritis and the submiliary myocardial nodule of acute rheumatism. In panniculitis the reaction was not exclusively confined to the local reticulo-endothelium, as in acute rheumatism and infective arthritis, and this dissimilarity indicated a more virulent infection or a lessened local immunity in panniculitis. Much more work was needed, but up to now the infection of chronic infective arthritis appeared to be one by a saprophytic streptococcus to which the patient had a high degree of general immunity but a low degree of local immunity in the synovia of his joints.

Dr. P. LAZARUS-BARLOW described work which he had done with Small's streptococcus cardio-arthritidis.

Prof. ISIDORE GUNZBURG (Medical Director) laid emphasis on the bad state of the skin as a causative factor.

Prof. TOM HARE (Royal Veterinary College) described the types of rheumatic disease prevalent in animals and the research work as to ætiology in progress. In horses and dogs we had rheumatic disease, the natural course of which is within the experimental period and which can be terminated at any stage at the will of the investigator. The investigation of this disease in its pathogenic phases offered great possibilities of advancing our knowledge of rheumatic disease in man.

Dr. L. BERTRAND (Antwerp) described work done with a polymorphic anaerobic organism discovered 30 years ago, which sometimes took the diplococcal form. If the proper technique was employed it was to be found in rheumatic lesions, and its changes under culture perhaps accounted for its varying effects on human tissue. A vaccine made from it was efficacious.

Dr. R. WATERHOUSE (Bath) thought rheumatoid arthritis and osteo-arthritis had little in common. Heberden's nodes were found more in the well-to-do than in the poor.

Dr. J. B. BURT (Buxton) believed the investigation of arthritis in animals would be helpful. One in 8 cab horses had arthritis. Trauma alone would cause it; the position of osteophytes was determined by strain and heredity—e.g., a short pastern, had its effect.

Surgeon Vice-Admiral GASKELL, R.N., said acute rheumatism was now very rare in the navy. There had also been a decline in chronic rheumatism, but they had not yet found any lessening of the prevalence of heart disease of rheumatic origin.

Dr. F. G. THOMSON (Bath) showed that Graves's disease and infective arthritis had a similar age curve, chiefly from 16 to 40 years. Chronic villous arthritis of the menopause was always associated with thyroid deficiency.

Dr. WATSON-WILLIAMS (Bristol) thought endocrine imbalance was the result and not the cause of these chronic infections.

Dr. G. L. KERR PRINGLE (Harrogate) said the atrophic type of rheumatoid arthritis only occurred in females. It might be associated with the beginning of menstruation. Pregnancy relieved it, but it returned at the puerperium. It began in the small joints, was centripetal and symmetrical. Diathermy of the ovaries probably removed the endocrine imbalance.

Dr. HENRY ELLIS (London) stressed the importance of biochemistry and the acid-base equilibrium of the urine. Endocrine rheumatism caused no alteration in this equilibrium. The cases with excess of uric acid were a special type. The alkaline and acid types were hereditary and needed different treatment.

Dr. A. P. CAWADIAS (London) referred to the sulphur metabolism in arthritis deformans—i.e., rheumatoid arthritis—and said more study of the metabolic changes was needed.

Dr. F. B. S. HOLMES (Bury) referred to 50 cases of afebrile chronic arthritis, all able to stand upright, in whom the basal metabolism was normal. Nevertheless we knew that thyroid benefited such cases.

Prof. PISANI (Florence) referred to acute rheumatism as a germ disease and to chronic forms as largely due to endocrine and sympathetic disturbances and anaphylaxis.

Dr. LANGDON BROWN, in replying upon the discussion, insisted that there must be no undue stressing of the endocrine and metabolic factors and that the infective theory still ranks high.

Communications, which will be published with the proceedings, were also submitted by authors unable to be present—viz., by Dr. GUNNAR KAHLMETER (Stockholm) on the prognostic value of the rate of sedimentation of the erythrocytes; by Prof. H. STRAUSS (Berlin) to the effect that endocrine factors are not truly causal; by Dr. HOMER SWIFT (New York) on rheumatic fever as a manifestation of hypersensitiveness to streptococci; by Dr. RALPH PEMBERTON (Philadelphia) on stasis of the capillary circulation and delayed sugar removal; by Dr. A. GORDON WATSON (Bath) on the hepatic and pancreatic functions in chronic rheumatic diseases; and by Mr. A. G. TIMBRELL FISHER (London) on the pathology of chronic arthritis with special reference to osteo-arthritis.

To this Session of the Conference there was also communicated an interesting paper dealing with

rheumatic fever, viewed as essentially a cardiac problem, contributed by Dr. Weil, of Paris, and Dr. F. Bezançon, which is published in another column.

THIRD SESSION—TREATMENT.

The Third Session commenced punctually at 3 o'clock with brief introductory words from Sir FARQUHAR BUZZARD, who called upon

Dr. R. L. J. LLEWELLYN (Member of the Committee of the Medical Research Council on Chronic Rheumatism) to read his paper on Prevention. Dr. Llewellyn related the classification of rheumatic diseases adopted by the Ministry of Health, which, with other considerations, he thought supplied a good basis for provisional working, though a change in attitude was required in respect of treatment; there should be less dwelling on "end-results" and more stress laid on "beginnings." He insisted on the importance of considering rheumatic diseases from the physiological standpoint, and advocated investigation of abnormalities in sweat secretion, believing that the maintenance of the skin in its functional efficiency was of essential importance. In this connexion he urged early resort to spa treatment, as detoxication could thus be effected and the blood-supply of the skin and the sweat secretion could be stabilised.

Dr. F. J. POYNTON (physician to University College Hospital) gave his reasons for thinking that salicylate of soda is not a specific for acute rheumatism in childhood in the same sense that quinine is for malaria; although it relieved the joint pains it did not seem to influence the subcutaneous nodules or to benefit the heart. Further, he thought its use, if pushed, was distinctly dangerous, especially in fragile children with severe carditis. The dangers which he feared, and which he attributed to the drug rather than to the illness, were death from coma or excessive vomiting, intense depression, pronounced cardiac weakness, and possibly œdema of the lungs. He had now used "tolysin" for four years and had found it to be a safe drug, even in cases of severe pancarditis, and with an action comparable to that of the salicylates on rheumatic symptoms. He usually gave from 30 to 50 grains in the 24 hours to young children. Dr. Poynton communicated notes of cases illustrating the effect of tolysin.

Dr. A. P. THOMSON (physician to the Children's Hospital, Birmingham) gave the requirements of the ordinary rheumatic child as: (1) hospital treatment in the acute stage, for perhaps six weeks; (2) treatment in a convalescent home, mostly at rest in bed, for a period varying from 1 to 6 months; (3) treatment in an institution hospital in which the child's return to activity is regulated under careful supervision. Baskerville School, in the suburbs of Birmingham, was such an institution and 7 years' experience of it had convinced him of its value and shown that the average case needed a stay of 9 months. The treatment of rheumatism must not be cut off from the hospitals and the school of recovery could be linked up, as had been done in Birmingham, by having a common medical staff. Baskerville was a "special education" school and education was helpful to treatment. Support from the public funds was needed for the establishment of such institutions throughout the country. Dr. Thomson described details of management and showed lantern slides of the school at work.

Sir WILLIAM WILLCOX (physician to St. Mary's Hospital) read a communication on the treatment of underlying infection in all the diseases comprised by the terms: (1) acute and subacute rheumatism: and (2) infective rheumatism, the latter term covering acute infective arthritis, fibrositis, and chronic arthritis. He analysed the arguments for the various directions of treatment, and in discussing special biological measures issued a grave warning against the abuse of vaccine therapy although pointing out the value of vaccines when properly administered. He concluded by noting that vaccines can with advantage be combined with other methods of treatment.

Dr. J. CAMPBELL MCCLURE (physician to the French Hospital) spoke as one not now engaged in supervising physical treatment but rather as one who saw many cases before and after physical treatment. The best results, he said, were obtained by a combination of methods, and the choice of the proper combination was no easy matter and demanded an intimate knowledge of the conditions underlying the lesions treated and a very practical knowledge of the best methods of physiotherapy. Physical methods were of great value and disbelief in their efficacy had been caused by unskilful application and unwise prescription. For example, massage might be too rough or baths might be too hot, and he had known an obstinate mucous colitis caused by a badly administered Plombières douche in combination with an excessive diet of lactic oats. The attendants needed to be well trained and well directed.

Prof. ISIDORE GUNZBURG described the anti-rheumatic centre established in connexion with the University of Brussels, with its very complete equipment for treatment, consultation, and research, and gave a sketch of the encouraging results obtained although most of the patients came for treatment very late. At the beginning of such a scheme it was perhaps natural that the severest and oldest cases were the first comers. A referendum indicated, he said, that the patients who have ceased to attend have derived considerable benefit. A detailed description of the Antwerp scheme was given in the hope that it would stimulate the creation of centres in all countries and thus help on the international struggle against rheumatism.

Dr. B. WHITCHURCH HOWELL (London) referred to the use of traction and immobilisation and operative procedures for securing stiff painless joints and new joints with a limited mobility, and illustrated his remarks by photographs. For spondylitis rest in the prone position was imperative and manipulation must only be undertaken in the chronic stage, after X ray examination and the certainty that there were no loose osteophytes. Much relief could be given by surgery.

Dr. H. WARREN CROWE (London) believed that vaccines were not more used on account of faulty technique. Some got no result because the dose was too small: others a bad result because the dose was too big. The first principle was to begin with a very small dose; streptococci which were the easiest to grow were often non-pathogenic and the vaccines made from them might be quite inert. Staphylococci were quite as important as streptococci in chronic rheumatic diseases and a focal joint reaction with a staphylococcus should be regarded as specifically incriminating that organism.

Dr. C. W. BUCKLEY (Buxton) said there should be facilities at spas to enable general practitioners to learn about the treatment done.

Dr. VINCENT COATES (hon. medical secretary to the Conference) said obvious foci must be removed, but the systemic nature of the disease must not be lost sight of. The essentials of treatment were the raising of immunity and the correction of biochemical abnormalities. Fractional test-meals, the careful examination of the stools, and the estimation of the blood gave indications for the treatment of achlorhydria, secondary anæmia, and leucopenia, and for the selection of a suitable diet. Joints were too much manipulated; they required splinting in the acute stage. Hydrotherapy was always useful and mud baths were sometimes so.

Dr. A. P. CAWADIAS (London) said that endocrines had a limited use in treatment. He had found colloidal sulphur useful. Auto-vaccines were no better than stock vaccines and all vaccine treatment was shock therapy. Arthritis deformans was not due to one cause but to a conjunction of causes.

Dr. HANS JANSEN (Copenhagen) outlined the forms and combinations of physical treatment which he advocated for the various types of chronic rheumatism.

Dr. DONALD BRIMS (London) explained the technique which he employed for the subdermal injection of oxygen, the application to the skin of emanations of radium and thorium, and the intradermal use of a new entero-antigen, with the protein and microbes removed, consisting only of lipoids and amino-acids. He claimed "amazingly good" results from this treatment in Paris, London, and Croydon.

Dr. WATSON-WILLIAMS (Bristol) described an unusual case where the focus had been postnasal catarrh and advocated a very careful search for foci before having the teeth out. Care was needed to see that only a subsidiary focus had been removed. He thought vaccine treatment was mostly shock therapy.

THE SOCIAL SIDE.

The City of Bath and the local branch of the British Medical Association received the members of the Conference with profuse hospitality. The City had arranged rooms at the various hotels for their numerous guests, while members of the medical profession at Bath showed the same hospitality. The whole organisation of the Baths was placed freely at the disposal of the visitors, and the Pump Room, built round the famous Roman bath, provided, as on many previous occasions, a model centre for the comfortable entertainment of a crowd of guests.

On Thursday evening a dinner was given by the City over which the Deputy Mayor and the Mayoress of Bath presided, and at which all the company had the pleasure of listening to excellent speeches from Sir GEORGE NEWMAN, in returning thanks for the guests and delegates, and from Lord DAWSON, who described the beauties of Bath with real eloquence. Upon this there followed a reception by the Lady Mayoress, and later various entertainments were given, at the close of which many members of the Conference, and not only the youngest among them, proceeded to dance enthusiastically till a late hour.

On Friday the Bath Branch of the British Medical Association were the hosts of the Conference at lunch at the Grand Pump Room Hotel, when Dr. R. G. GORDON, President of the Branch, presided and indicated in his speech of welcome how deeply the Association had at heart such great social medical questions as the incidence of rheumatic diseases. Sir FARQUHAR BUZZARD having replied for the guests, Sir HUMPHRY ROLLESTON proposed the health of Dr. F. G. Thomson, the Chairman of the Conference, after whose reply Dr. GUNZBURG set out the pleasure which the visit had given to himself and all his confrères.

The annual meeting of the Balneological Section of the Royal Society of Medicine was held on Saturday, May 12th, following the Conference, and in connexion with it demonstrations of treatment on appropriate cases were given at the Hot Mineral Baths throughout the early morning. Clinical cases were demonstrated later at the Royal Mineral Water Hospital by Dr. R. Waterhouse (osteo-arthritis), Dr. J. Lindsay (gout), Dr. Vincent Coates (infective arthritis), Dr. R. G. Gordon (fibrositis), and Dr. A. Gordon Watson (sciatica). In the afternoon a motor tour gave the guests an opportunity of seeing Bath thoroughly, its environment, and its historic features. On Sunday there was a service at the Abbey at 11, to which delegates were bidden, and in the afternoon a motor tour of the Mendips was arranged, giving the visitors the chance of seeing the famous Cheddar Gorge.

FRANCES WOOD MEMORIAL PRIZE.—This year the Council of the Royal Statistical Society will again award this prize, of the value of £30, for the best investigation, on statistical lines, of any problem affecting the economic or social conditions of the wage-earning classes. Essays should be sent not later than Oct. 31st to the hon. secretaries of the Royal Statistical Society, at 9, Adelphi-terrace, London, W.C. 2, from whom particulars may be had as to eligibility to compete.

Reviews and Notices of Books.

THE BLOOD-VESSELS OF THE HUMAN SKIN AND THEIR RESPONSES.

By THOMAS LEWIS, M.D., F.R.S., Physician of the Staff of the Medical Research Council; Physician of University College Hospital. London: Shaw and Sons, Ltd. 1927. With 76 figures. Pp. 332. 37*s.* 6*d.*

Harvey raised at least as many problems as he solved in the discovery which we celebrate this week. It is appropriate to draw attention to some of the recent efforts made by a physician-physiologist, whose life-work has been the study of the circulatory mechanism, to throw light on the control of the circulation in the organ most distal from the heart. Much of the work published by Sir Thomas Lewis in this monograph has been carried on with his collaborators over a period of 11 years, and has already appeared in original articles in *Heart* and in the *Journal of Physiology*. These the author has collected not merely with the idea of presenting his observations in a more readable form, but with the purpose of stimulating a wider study and teaching of human physiology.

The ultimate object of his researches is to examine more accurately the various ways in which the blood flow to the skin is controlled, and to account more fully for variations in cutaneous colour. In the introductory chapter, therefore, he gives an account, based on the work of Spalteholz, of the anatomy of the blood-vessels of the skin, and describes in detail the methods employed in examining those vessels microscopically, and in studying by means of thermo-electric couples skin temperature and its change in response to various influences. Apart from this, his apparatus and technique are of the simplest order. With keen observation and great ingenuity in constructing experiments, he has studied the pallor of the skin produced, after a latent period, by a slight mechanical stimulus, and has proved conclusively that it is due to actual contraction of the minute vessels in response to tension of their walls. He further brings out the surprising fact that the force exerted by these terminal arterioles, capillaries, and small venules is at least equal to, if it does not exceed, any pressure which can be brought to bear on them from the arterial side. If a greater stimulus is applied to the skin, a red instead of a white reaction is produced, due to active dilatation of the minute vessels, and this appears without the intervention of the central nervous system or of a local nervous reflex. Only if the skin is susceptible, or the stroke stimulus unusually strong, does there appear surrounding the red line a spreading flush or "flare," the result of dilatation of the strongly muscular arterioles by a local axon-reflex. This leads him to the central theme of his monograph, the "triple response" of the skin to injury. This response consists of localised capillary dilatation, the coincident local œdema or wheal which succeeds it, and the surrounding "flare." Whether the injury be mechanical, electrical, chemical, or thermal, the triple vascular reaction is essentially the same. Sir Thomas Lewis examines the factors responsible for the production of the three phases of this complex response, and presents a considerable amount of evidence to show that injury of the skin liberates a substance exerting a local action indistinguishable from that of histamine, on the cutaneous vessels and nerves. He is unable to prove conclusively that it is histamine, and wisely refers to it as the "H-substance." The idea that tissue destruction leads to the production of a histamine-like body is, of course, not novel, for the work of H. H. Dale, W. B. Cannon, and many others has shown that there is a remarkable similarity between wound-shock and the shock resulting from the intravenous injection of histamine. But the fact that the simple response of a healthy human skin to trivial injuries is of a similar

nature, though varying in degree, to that following grave destruction of tissue, is of the greatest interest, in that it would appear to be the unvarying reply of the cell to injury of any kind. Certain difficulties are inherent in this conception, particularly with regard to slowly acting stimuli such as ultra-violet light, X rays, radium, bacterial poisons, and certain skin irritants such as mustard gas, cantharidin, and chloroform. The reaction produced by these irritants is latent, taking anything from several hours to several weeks to develop, and it is not very clear at first sight how this could be the result of liberation of the H-substance. Sir Thomas Lewis recognises the difficulty, but adduces evidence in support of the view that the fundamental changes are essentially the same as in the case of the rapidly acting irritants. The chapter on the regulation of blood flow by central nervous channels is arresting in the explanation offered of the vaso-dilatation following stimulation of a sensory nerve, which was noted by S. Stricker and confirmed by W. Bayliss and J. N. Langley. It has been deduced from this phenomenon that vaso-dilator fibres accompany the sensory nerves, and that the impulse is carried in the latter antidromically. Sir Thomas Lewis, however, holds the view, strongly supported by the evidence available, that the anti-dromic nerve impulse influences metabolism in the cells of the skin, and releases in the tissue spaces the H-substance, which thus indirectly produces vaso-dilatation. He believes that herpes zoster and herpetiform eruptions are produced by a similar mechanism.

These are only a few of the points of interest in this monograph. The physician and surgeon, as well as the physiologist, will find material for reflection and stimulation in the observations and experiments on reactive hyperæmia, skin colour, capillary pulsation, Bier's spots, and the development and distribution of morbid skin eruptions. Whether or not the author succeeds in stimulating the study and teaching of human physiology, his observations will certainly prove the basis for investigation in the field of practical medicine, and may indeed play a considerable part in the development of clinical knowledge of diseases of the circulation and of the skin. The debt which clinical medicine already owes to Sir Thomas Lewis for advancing our understanding of disorders of the action of the heart is great; the clinical scope of his present line of work is no less wide.

THE MEDICAL ANNUAL, 1928.

Forty-sixth year. Bristol: John Wright and Sons, Ltd; London: Simpkin, Marshall, Ltd. Pp. 632. 20*s*.

L'Année Médicale Pratique, 1928. Seventh year. Edited by Dr. CAMILLE LIAN, Professeur Agrégé à la Faculté; Médecin de l'Hôpital Tenon. Paris: René Lépine. Pp. 652.

THE function of a medical annual is to provide readers who have not been able to keep in full touch with current medical literature with an accessible review of all important events of the preceding year. The "Medical Annual" maintains its high standard of excellence, in subject matter and in the clearness with which that matter is arranged and indexed. The most important feature is the Dictionary of Practical Medicine, which embodies abstracts of the most valuable recent papers on treatment. The editors naturally give first place this year to the liver treatment of pernicious anæmia, the two articles on which, by Prof. F. R. Fraser and Dr. I. J. Davies, form as compact and comprehensive an essay on the subject as any practitioner could wish for. Dr. Henry Devine describes narcosan, a new remedy for alcohol and drug addiction, which consists of a mixture of vegetable lipoids and vitamins and has given promising results; Dr. Davies contributes a review of the present position of knowledge about the vitamins. On the surgical side comment is made on the use of large doses of anti-gas gangrene serum against appendicitis with peritonitis and in intestinal obstruction, on the assumption that these complaints are due to the action of *B. welchii*. A successful case of ligature of the abdominal aorta is recorded, and an article by Sir William Wheeler describes the operation of division of the scalenus anticus muscle to relieve pressure on the brachial plexus by cervical rib. A section on the surgical diseases of children has been introduced, and deals, among other subjects, with a new inflation treatment without operation for intussusception, and with some claims made by South American surgeons for extra-ordinarily quick cures in bone tuberculosis. Besides the index, the Annual also contains descriptions of new pharmaceutical and dietetic products, instruments, and appliances, plentifully illustrated; a classified list of books on medical subjects published last year, and the usual gazetteer of mental institutions, spas, and periodicals. It is a reference book used and valued by medical men in every part of the Empire.

"L'Année Médicale Pratique" is a French attempt to meet the same need. It was to have appeared first in the autumn of 1914, but was delayed by the war until 1922. It contains a digest of recent medical work in all languages, together with miscellaneous information, and improves every year. Its scope is not yet as wide as that of the older publication, but since the outlook of its editor has a different focus, the British reader will find much to interest him in its pages.

DIFFERENTIAL DIAGNOSIS IN NEUROLOGY.

Praktische Differentialdiagnostik für Ärzte und Studierende. Edited by Prof. Dr. G. HONIGMANN, Giessen. Bd. II. Neurologie. Teil 2. Psycho-neurosen, Funktionelle Neurosen, Erschöpfungs-zustände. By Dr. W. UNGER, Superintendent of the Hohenpeissenberg Sanatorium. Dresden and Leipzig: Theodor Steinkopff. 1927. Pp. 161–300. R.M.8.

THIS instalment of the large vade-mecum of differential diagnosis for practitioners, edited by Prof. Honigmann, contains sections dealing with neuroses of all kinds, ranging from conditions of fatigue and constitutional neuropathic states to migraine, epilepsy, and affections of the sympathetic nervous system. A useful division of the book examines the diagnostic significance of a number of syndromes and symptoms, such as headache, disorders of sleep, fits and attacks of various kinds, "weakness," and sexual impairment. As befits a text-book of this kind, the descriptions are brief (in some instances almost to sketchiness), succinct, and eminently practical.

A FRENCH TUBERCULOSIS VADE-MECUM.

Tuberculose pulmonaire, Tuberculose des séreuses. By Dr. PIERRE PRUVOST. Paris: Librairie Octave Doin. 1927. Pp. 448. Fr.30.

THIS book is a squat little volume in a series of Daily Consultations, evidently intended for carrying in the pocket or handbag of the busy general practitioner. It is divided up into small sections and paragraphs with headings in black type heavily underlined, and italics are freely used throughout for purposes of emphasis. There is hardly a redundant word in the book; everything, including the illustrations, appears to have been sacrificed to the multum-in-parvo ideal. The illustrations are in some cases ingeniously devised to show all that is essential at a glance, but much has been sacrificed to the odd format. Prescriptions are fairly numerous: there is a short chapter illustrating graphic representation of physical signs, and a list of hospitals, sanatoria (public and private), preventoria, schools, and isolation institutions to which the French practitioner may send his patients. The information on the clinical side is succinct and pithy, but the pathological teaching is meagre.

MINOR SURGERY AND BANDAGING.

Nineteenth edition. By GWYNNE WILLIAMS, M.S., F.R.C.S., University College Hospital. London: J. and A. Churchill. 1927. Pp. 424. 10s.

THIS handbook has reached such an established position that comment is scarcely necessary, but we must congratulate its author on the way in which he has brought it up to date and yet kept it within its original convenient compass. The house surgeon can turn to it for the latest hints on the putting-up of a fractured femur or the treatment of a burn, and if he has progressive ideas he will be delighted to find a brief, but useful, account of the methods of local anæsthesia. We cannot imagine a handbook of greater use to the embryo surgeon, and there are few who practise that art who would not get valuable hints from its pages.

JOURNALS.

AMERICAN REVIEW OF TUBERCULOSIS. March, 1928. Vol. XVII., No. 3.—Dr. Henry Willis reports the result of experiments carried out on guinea-pigs to determine the duration of cutaneous hypersensitiveness to tuberculin following inoculations with bacilli of low virulence, and to investigate the relation of tuberculo-immunity to tuberculo-allergy. A group of guinea-pigs was submitted to subcutaneous inoculation with an emulsion of tubercle bacilli. At the end of a year the animals were all found to be healthy and for the purposes of the experiment were regarded as "immunes," a number of non-infected controls being reserved as "non-immunes." Observations were made on the result of cutaneous tests carried out at intervals beginning at the twelfth and terminating at the thirtieth month after the original inoculations. Further experiments were made to determine the degree of immunity persisting to the end of the period of the experiment. The results support the view that allergy fluctuates with the course of infection and that as infection subsides allergy diminishes. Two years after infection allergy could not be demonstrated by an injection double that of the ordinary reacting dose of antigen. Nevertheless, that some degree of allergy may persist for an even longer period was shown by evidence of hypersensitiveness, which was revealed by a dose of five times the normal standard given 27 months after the original infection. Dr. Willis found that a high degree of immunity might accompany a degree of allergy barely demonstrable. A new infection with a virulent strain of bacilli was capable, however, of restoring allergy at once to a high level. Thus an allergy which has become "latent" may be quickly revived in response to infection. It is possible, therefore, that immunity may also become "latent" and be capable of revival in a similar manner, both allergy and immunity responding to the same stimulus in the same way.—Dr. Casper F. Hegner, in a paper on Surgical Rest in Pulmonary Tuberculosis, summarises the means at our disposal to secure this, and outlines the indications for their use. Phrenic avulsion, extra- and intra-pleural pneumolysis, limited and complete thoracoplasty are briefly described. Dr. Hegner gives a warning that to be of value in pulmonary tuberculosis the aid of surgery must be invoked before the patient's reserve is depleted. Phrenic avulsion is recommended as a valuable adjunct to induced pneumothorax. Stasis of blood and lymph within the lung and paralysis of the diaphragm cause a restriction of gas-absorption from the pleural space and the necessity for refills is thus less frequent. Phrenic avulsion by lessening the work of one lung throws an added strain on its fellow. When thoracoplasty or other surgical procedure is under consideration and a doubt exists as to the condition of the opposite lung, phrenic avulsion, carried out on the extensively diseased side, may thus be used to test the capacity of the other lung to sustain respiration. Intrapleural pneumolysis by the method of Jacobaeus entails grave risks from hæmorrhage, empyema, and the bronchial or pleural fistula, and is not recommended. Dr. Hegner usually employs local anæsthesia when operating for thoracoplasty. With this method the condition of the patient can be better gauged during operation, the cough reflex is not inhibited, aspiration of secretion is avoided, there is less oozing of blood, and the immediate post-operative phase is much better.—A contribution on the behaviour of white blood cells in tuberculosis was summarised last week on p. 976.

FUKUOKA ACTA MEDICA.—The issue of January, 1928, the first of Vol. XXI., contains the conclusion of Dr. H. Kokawa's work on experimental trypanosomiasis with special reference to the mechanism of trypanolysis. Dr. R. Hattori continues his study of the blood picture in artificial malaria and makes some observations on the occurrence of spirochætes in progressive paralysis. The other articles are from the pens of S. Ohmori on certain interesting anatomical points in the bird's heart; H. Tsunoda on the causes of the rise of venous pressure in pneumothorax, and J. Uegaki on a hæmo-proteus occurring in Formosa. While the journal is printed in Japanese characters, précis of the papers appear in German, French, or English as the case may be.

New Inventions.

AN IMPROVED SYRINGE FOR THE TREATMENT OF VARICOSE VEINS.

AFTER 75 years of varying fortunes, the successful treatment of varicose veins by the injection of sclerosing media is now receiving the recognition it deserves. There is still room for improvement in the instruments used, and we have recently had made a new type of syringe, modified from that

invented by Katz, which appears after a test period of three months to possess definite advantages over the Record syringe hitherto recommended. As will be seen from the accompanying illustration, this syringe has a glass barrel and piston, the former graduated in capacities of one quarter of a cubic centimetre, the latter coloured dark blue (in the actual syringe) for convenience in gauging the amount of a colourless fluid which is to be injected. The lower end of the barrel passes into a fine glass capillary containing two small dilated chambers and bent upon itself so as not to obstruct from view the segment of the vein to be injected. A white, opaque background has been introduced in the length of this tube in order to render the appearance of a minute column of blood more easily visible. The metal nozzle of the syringe, which snugly fits all makes of hypodermic needles, has the same coefficient of expansion as glass, thus readily allowing of sterilisation by boiling. When a vein is entered, blood can be aspirated along the capillary tube into the ampullæ, and when, subsequently, an injection is made, the blood is forced back into the vein, leaving the remaining fluid in the barrel clear and untinged. In this way it is possible to administer to a patient six or more injections without having to change or wash out the syringe.

The instrument is manufactured by Messrs. B. Braun and Co., Ltd., Melsungen, Germany, the makers of the original Katz vein syringe. The English agents are Messrs. Adair, Dutt and Co., 47, Victoria-street, London, S.W. 1.

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THE LANCET.

LONDON: SATURDAY, MAY 19, 1928.

WILLIAM HARVEY.

THE third centenary of the publication of WILLIAM HARVEY'S "De Motu Cordis" has been celebrated during the week with ceremony befitting a discovery which first made rational treatment of human disease possible. The KING received at Buckingham Palace 100 delegates representing 28 countries who presented an address of homage to the memory of this Englishman of science; but to realise his greatness it is necessary for the student of medicine to live back into the circumstances of HARVEY'S time. Amid all the pomp and circumstance of Monday's pageant let no one forget the little dark studious physician who sat at a table in the Great Hall of St. Bartholomew's Hospital, writing prescriptions for such patients as could be brought to him, with the hospital apothecary and matron standing one on each side of his chair. It was in these surroundings that HARVEY developed the courage of which so many have spoken, a courage which we witness in his standing up against the surgeons of his own hospital, in his insistence that each should tell "what he findeth and what he useth to every external malady, that so the doctor being informed may better with judgement order his prescriptions." Against this, as NORMAN MOORE has noted, the chirurgeons vigorously protested. HARVEY'S courage did not excite among his contemporaries the attention which it deserved, for although his upset of the Galenic systemic of the circulation ranks with GALILEO'S upset of the Copernican system of the external universe, it did not bring him into conflict with the orthodox religious teaching of his time and it was not HARVEY who, murmuring "but it does move," left the presence of a persecuting Inquisitor. For all that, the detachment which enabled him to strike out from tradition, to discard the teachings of GALEN, which were then accepted and revered as those of a prophet, was courage of no common order. It is, as Sir ARTHUR KEITH reminds us, difficult for us moderns to visualise the circulation of pre-Harveian times, when under the physician's finger the artery expanded of itself, drawing in blood, spirits, air, and vapours of all sorts and squeezing them out again as it contracted. Generations of students, brought up on the lucid diagram in HUXLEY'S "Elementary Physiology," will have difficulty in facing the problems of the circulation as HARVEY faced them. His discovery came to him with no flash of light, with no startling attributes of a revelation. It was an answer to a series of logical questions which he put to himself, which led up to the observation: "I began to think whether there might not be a motion, as it were, in a circle." It was the result, as he says, of demonstrations before his colleagues at his College, demonstrations repeated again and again until every objection was met and dealt with. It is doubtful if any generation has visualised these crucial experiments in the way that has been made possible by the pictorial film prepared by Sir THOMAS LEWIS and Dr. DALE, a demonstration which won the admiration of all those who witnessed it.

Many discoveries have resembled the sudden crystallisation of an over-saturated solution when a crystal is dropped into it; there have been other investigators on the point of reaching the same goal at the same time. But HARVEY was far ahead of his fellow workers, both in experiment and interpretation of results. The great VESALIUS, although he could find no holes in the ventricular septum, assumed the passage of humours through it. HARVEY avowed himself a partisan of truth alone, and was so sure of himself and of his observations that he spent no time in controversy, or in refuting the arguments of others. Indeed, as Mr. GEOFFREY KEYNES tells us in the preface to the admirable bibliography which appears for the occasion,[1] HARVEY published only three books during his life, so that the task of compilation has been a simple one. HARVEY'S critics, though vociferous enough in their day, have mostly sunk into an oblivion in which they may be allowed to remain; but no one who wishes to understand the circulation of the blood can safely refrain from reading of its discovery in one or other of the places indicated in the bibliography.

THE BORDERLAND OF PHYSIOLOGY AND PSYCHOLOGY.

MODERN histological methods have taught us much about the structure of the cerebral cortex, but its function has been more difficult to investigate. It forms the borderland between psychology and physiology, and explorers from these two sciences do not yet report their discoveries in a common language. The behaviour of a spinal animal is complex enough, as SHERRINGTON and others have shown, but at least its response to stimuli is uniform and quantitative; whereas the higher reflexes are controlled by rules so obscure that the general impression has been one of anarchy. For a workable method of observing these higher reflexes in animals we are indebted to the school of Prof. IVAN PAVLOV, who gave an account of his most recent work in the Croonian Lecture of the Royal Society, of which we published a summary last week. His invaluable experiments show that the difficulty of prophesying the results of stimulation of the cortex is due less to the complexity of the reflexes than to the great variety of influences which may inhibit response.

The first step in the comprehension of PAVLOV'S work is to realise the distinction between inborn reflexes, characteristic of any species, and acquired reflexes, which are peculiar to the individual and are founded on his own experience. PAVLOV classes the first group as "unconditioned" reflexes, whilst the second are called "conditioned" reflexes, because their nature largely depends upon the conditions under which they are established. Examples of inborn or unconditioned reflexes are the knee-jerk, the stepping reflex, the lower sexual reflex, and salivation at the sight of food. Advantage was taken of this last phenomenon in PAVLOV'S investigations in the dog. He found that if a musical note is regularly sounded at the time when food is presented, salivation is eventually stimulated by the sound alone, in the absence of any food. This is a conditioned reflex since it depends on the special experience acquired by the individual. Such a reflex may be provoked by any form of stimulus—auditory, visual, cutaneous, or olfactory—but it must of course develop out of a reflex mechanism which is already in existence. Furthermore, the time-element is of importance—for example, if in the salivation experiment food were given before the sound, it is obvious that no association would

[1] Bibliography of the Writings of William Harvey. Cambridge University Press. Pp. 67. 21s.

be set up. The underlying principle of the formation of new reflexes is that if during the occurrence of any unconditioned reflex a receptor organ is stimulated, a new path is formed between the receptor and the effector organ. A given stimulus may thus acquire, for the individual in question, a significance which it did not formerly possess; by taking over the mechanism of the unconditioned reflex on which it was based it produces results which may appear irrelevant.

These studies are purely objective. The secretion of saliva, the chief indicator used in the experiments, is particularly suited to such objectivity, and other indicators are similarly treated. The experimental dog cannot be usefully interrogated about his mental experiences, and deductions are avoided as to the presence of sensations or emotions, a knowledge of which rests upon our own introspective observations. The turning of the head in a specific direction is only a turning of the head; no presumption as to awareness is made, for awareness is at present outside the bounds of an objective physiology. By this self-imposed limitation the physiologist provides the psychologist with a means of making comprehensible the fact that stimuli can fall upon a peripheral receptor organ, be analysed by the cortical part of the system, and produce a complex result without the subject being aware of the process of analysis or perhaps even of the stimulus, which has been conditioned by previous experience. It is a commonplace of psycho-pathology that mal-adaptive mechanisms can be brought into play by stimuli that are not perceived by the subject or, if they are perceived, are not consciously brought into relation with the previous conditioning experience. Some phobias arise in this way, and in answer to ordinary questioning the patient is able to throw no more light upon the cortical processes at work than is Prof. PAVLOV'S experimental dog. What is not so generally known, however, is that the symptom may show itself at the physiological level, and there have been described cardiac and asthmatic attacks, or recurrent intestinal disturbances, arising from earlier experiences that have conditioned a complicated reaction derived from a simple inborn reflex. In the human subject it is possible to elucidate these earlier experiences by modern psychological technique and thus study the subjective aspect of conditions that are being simultaneously approached by the objective physiological methods of PAVLOV and of ANREP, his pupil and interpreter. Such a combined attack upon clinical problems may lead to the discovery of a relation between superficially incompatible views. The allergen theory of asthma, for example, appears irreconcilable with that of a psychogenic origin, and yet there is clinical evidence in favour of each of these theories. Given a primary emotional stimulus that produces asthma in the presence of a possible allergic substance, that substance may produce a conditioned reflex and come to be a sufficient stimulus to provoke the exaggerated dyspnœic reaction originally roused by the emotional stimulus. The labile skin reactions known to occur during an asthmatic attack may indicate a physical disposition towards the development of a conditioned reflex dependent upon a chance allergen. This would account for the capriciousness of allergic phenomena, which is otherwise so difficult to bring under any known physiological law. That a consideration of PAVLOV'S work should arouse a suggestion of this kind indicates the prospect that a further connecting link between physiological and psychological medicine is being forged.

THE RHEUMATIC DISEASES.

THE Conference on Rheumatic Diseases at Bath was a genuine success, regarded from every point of view. The medical profession of the city and the civic authorities are alike to be congratulated upon having taken the lead of a great and orderly endeavour to mitigate the evils of a scourge upon our public and our individual health, and so much interest has been aroused by many of the contributions to the debates that we may look forward confidently to this translation into practical form of some of the advice given.

The proceedings of the Conference were arranged in a sequence which indicated exactly the extent of the evils to be counteracted and the multiplicity of forms in which those evils manifest themselves, calling accordingly for prevention and relief in an embarrassing variety of directions. At the first session the speakers presented authoritative descriptions of the social aspect of rheumatic diseases, of their cost to the country, and of the existing methods for organised defence; the general incidence of rheumatic diseases and the influence upon this incidence of the circumstances of environment were debated in such communications as those made by Sir WALTER KINNEAR, the Controller of the Insurance Department of the Ministry of Health, and Dr. REGINALD MILLER, which are published in full in other pages of this issue of THE LANCET. At the second Session of the Conference we obtained an illuminating impression of the vast work that lies ahead before any definite opinions can be arrived at in regard to the comparative importance of the many factors playing their part in ætiology. There were detailed the predisposing circumstances in the rheumatic inflammation of childhood and the possible bacterial association therewith; the position in any orderly scheme of causation occupied by cardiac symptoms; and the reasons for remembering the endocrine influences that might be at work. Further, the pathology of chronic arthritis and fibrositis was reviewed, and especially interesting communications were made in regard to the manifestations of infective arthritis in animals. The contributions were made in almost every case with a sense real of responsibility, the evidence preceding the conclusions.

The manner in which the proceedings were conducted is especially to be commended, for it left no opportunity for a waste of time in fruitless debate. Much of the evidence was taken for granted, and remains for future scrutiny, but the conclusions were given to the Conference. With so many men producing the reasons upon which they based their tenets—that in this place or in that place we must look for the prime cause of rheumatic diseases, and that in this way or in that way relief can be secured—it was evident that debates upon details would defeat the object of the movement. Any discussions with the intent to prove that one circumstance or one method was more important than another in ætiology or treatment would have resulted in no clearing up of admitted confusion. The meeting had not been convened to evaluate the factors causing rheumatic diseases or the methods designed to meet them, but to collect evidence upon which such evaluation could be made. A sifting of the vast information now obtained should lead to practical measures in certain public directions where the needs have been indicated clearly. Further, it should bring about a classification of rheumatic diseases which will assist in the determination of the appropriate treatment. To this last question the third Session of the Conference

applied itself, when surveys were given of the methods which had been found useful in the prevention of chronic rheumatism, of the place that vaccines may occupy in the treatment of underlying infection of the results of vaccine therapy, and the scope of surgery in the treatment of arthritic deformities. There was a substantial amount of contradiction in the evidence, and accordingly there were opposing recommendations for treatment. But these things should be regarded as a wholesome outcome of the deliberations, for the variations of view will form the proper terms of reference for the intensive inquiries which must follow, and for the institution of which the medical profession can rely upon the cordial support of the Ministry of Health.

Annotations.

"Ne quid nimis."

REORGANISATION OF THE INDIAN MEDICAL SERVICES.

INDIA definitely requires European assistance, not only for the care of the military and civil European population, but for the maintenance in the country of that spirit of modern medicine which has accomplished already such mighty things, and which day by day is spreading in influence and value. Whatever changes may be inherent in the Indian reform scheme, the survival of this principle was in the minds of those who framed the Verney-Lovett report, and of the Lee Commission, and the Secretary of State for India has stated repeatedly that in any scheme for reorganisation of the Indian Medical Service it would be essential to earmark for the portion of the service not immediately engaged on military duties a number of civil positions, especially research or professorial appointments. It would clearly be a gain, not only to recruiting, but to Indian public health itself, for the medical officers of the Service to be employed in the departments of research and teaching in which their predecessors have done so much for the welfare of India. We have now at last the final decision of the Government of India in regard to these matters, and during the week a communiqué has been issued dealing in detail with the reorganisation of the medical services in India. The scheme now sanctioned is based on proposals framed in consultation with local governments. The Indian Medical Service, constituted on the same broad lines as at present, will be retained primarily to meet the needs of the Indian army, and in order to maintain two essential requisites —namely, (1) the necessary minimum war reserve of medical officers, and (2) the provision for European medical attendance on officers and their families. Local governments in India will be required to employ a stated number of I.M.S. officers. It has been calculated that the war reserve to be employed by the civil side should consist of 134 British and 66 Indian officers, the larger proportion of British officers being due to the fact that they cannot be recruited on emergency in India from the ranks of private practitioners. Medical attendance on British personnel, and the requirements of civil administration, for which the Central Government is still responsible, involve the provision of a number of employments termed "residuary," the incumbents of which must be retained permanently in civil employment, so as to ensure the continuance under any circumstances of a skeleton staff to cope with civil requirements. The total number of officers required for civil employment in the I.M.S. is now calculated at 302, allotted as follows: war reserve, 200; residuary posts in provinces, 46; foreign and political departments, 17; gaols, 8; special posts under the Government of India, 14; port health officers at Bombay and Aden, 2; reserve of 5 per cent. as allowance for illness, 15. Of this total 212 will be European and 90 Indian. To provide employment for these 302 officers, 237 posts are required, 59 of which will be available under the Government of India, and 178 (of which 112 must be held by British officers) will be provided in the provinces. The estimate of the medical requirements of European medical attendance is based on data which will change from year to year as the proportion of European to Indian civil officers diminishes; it will therefore be subject to scrutiny and revision. The remaining 66 posts will be open either to Europeans or Indians, while 28 out of 59 appointments under the Government of India will similarly be open to officers of either race. Complete lists of the residuary posts are appended to the communiqué. The adoption of the new list of posts will leave on the civil side a surplus of I.M.S. officers now holding appointments, but care is to be taken for the full preservation of their existing rights. Their prospects will be allowed to diminish only pari passu with the absorption of the surplus which will remain until the number of officers now in civil employ is equal to the number of posts reserved for them in the new list. The detailed measures to safeguard these prospects are being worked out. The communiqué also sets out the rules which will come into force forthwith as an integral part of the reorganisation scheme, and which have been drawn up to safeguard the varied, if not conflicting interests, of the three parties: the Indian army, the provincial governments, and the medical officers themselves. The scheme as set forth makes it clear what are the prospects, immediate and remote, for British recruits to the medical services in India. We have not hesitated to express the belief that the period of depression is now passing, and that the prospect is again bright for those who are fitted in physique and disposition for a medical career in India. That belief is strengthened by a perusal of the communiqué.

THE DENTAL BOARD.

OPENING the fourteenth session of the Dental Board of the United Kingdom Sir Francis Dyke Acland remarked on the loss of Mr. L. G. Brock who resigned his membership on taking up his duties as chairman of the Board of Control. If the Dental Board's parents, he said, were the Privy Council Committee and the Ministry of Health, and Sir Almeric Fitzroy was chiefly responsible for bringing them together, Mr. Brock was the midwife, monthly nurse, and nursery governess during its early days. His greatest and most permanent contribution was to be seen in the relations of the Board with the dental schools. "The fact that his work has obtained their respect, whether we have laid upon them conditions by which they could earn our grants, or whether grants have had to be refused, is surely," said Sir Francis, "a tribute to his fairness and impartiality." Mr. Brock's successor, Mr. M. Heseltine, had had an equally wide experience, and held a high position in the Ministry of Health. Among the points that would be brought before the Board at this session was a motion for a reduction of the retention fee, payable annually by dentists whose names were on the register, from £4 to £3. Every pound of retention fee meant about £9500 in income. The present income with an original registration fee of £5 and a retention fee of £4 was something over £2000 in excess of expenditure, but the surplus arose mainly from interest on specific reserves, and, if these were expended upon the objects to which they were allocated, the surplus would only be something over £1000. The retention fee would now automatically revert to £5 unless new regulations were made. Sir Francis was inclined to favour the reduction of the registration fee from £5 to £2, and of the retention fee from £5 to £2, during the first four years after qualification, so as to afford relief to young dentists when they needed it most. This arrangement would entail a loss of £6000 on an entry of 400. Good work had been done in bringing the advantages of the dental profession before headmasters of schools, several thousand copies of a

memorandum on the subject having been distributed. Dental health propaganda continued to expand. The demand for lectures was increasing rapidly. Certain aspects of the subject of dental clinics were likely soon to be sub judice. The Board could be assured that members of the Discipline Committee were fully alive to the possibilities of the commercialisation of dentistry which might be involved and to the danger to the public interest which this might entail. Action must be directed solely by the duty to see that the law, and the code of conduct proper to dentists, are maintained.

TREATMENT OF URTICARIA WITH ALKALIS.

URTICARIA is generally placed in the group of allergic phenomena, being attributed to a specific supersensitiveness of the individual to some protein poison, arising within or without the body. Prof. T. Schreus,[1] of Dusseldorf, endeavours to find an explanation of some cases—at any rate, the more obscure and intractable ones—in a relative diminution of the alkaline reserve of blood and tissues. He was led to an investigation of this metabolic factor by discovering that large doses of bicarbonate of soda are sometimes helpful in treatment, and that some patients can be cured by the intravenous injection of the drug. In order to test the hypothesis he estimated the alkaline reserve in 81 persons, using Barcroft's apparatus, and controlling his results by van Slyke's method. Twenty-two were subject to urticaria and the results indicated that in this disease, and in Quincke's œdema, there is a sensible lowering of the alkaline reserve. A comparative table shows his results expressed in terms of carbon dioxide volumes per cent. The readings are highest in pruritus and eczema (60·7 and 60·9 respectively), whereas in urticaria they may be as low as 53·7 and 53. One of the cases in which urticaria was controlled by bicarbonate injections had an alkaline reserve of only 46 volumes of CO_2 per cent. Afenil (calcium-urea) injections proved of no avail, and when ammonium chloride was administered there was a violent outbreak of wheals. Prof. Schreus does not claim that the diminution of alkaline reserve is responsible for more than a certain proportion of cases of urticaria, and it would obviously be unreasonable to regard the problem of this disease as solved. But it may be worth while to determine the alkaline reserve in intractable cases, and where it is low, to treat the patient with sodium bicarbonate.

SOCIETY FOR RELIEF OF WIDOWS AND ORPHANS OF MEDICAL MEN.

AT the annual general meeting of this, the oldest medical provident institution, held on May 16th, the report for 1927 was presented. During the year four members were elected, three died and one resigned. The Society now consists of one hon. member, 161 life, and 141 ordinary members, making a total membership of 303. The invested funds amount to £139,400. The income from investments was £4207 10*s*. 6*d*.; income-tax was returned to the sum of £872; and £358 was received in subscriptions and donations. During the year a legacy of £100 was received. The working expenses were £375. One widow died during the year and two were elected on to the funds; one orphan was also elected. £4782 was distributed in grants among 51 widows and seven orphans. In January a set of silver salvers was presented to the secretary, Mr. E. J. Blackett, in appreciation of his successful conduct of the case against the Inland Revenue authorities last year. The directors believe that the membership of the Society would be larger if it were better known and increase its membership. The Society is both provident and benevolent. Should a member die and leave his widow with an income not above £125 per annum, she would, on the present scale, receive from the Society a yearly grant of between £75 and £90, and any children under the age of 16 would receive a yearly grant of £60 each. Over the age of 16 special grants may be made to orphans to enable them to continue their education or start in some profession. These grants in many cases amount to £52 10*s*. a year to each orphan. The directors wish to attract the attention not only of newly qualified and newly married members of the profession, but also of medical men whose dependants would never be in need of assistance from the funds. These latter, either by becoming annual subscribers or by giving a yearly donation, would be helping the widows and orphans of their less fortunate brethren. Membership is open to any registered medical practitioner who at the time of his election is resident within a 20-mile radius of Charing Cross. The subscription is small compared with the benefits that may be derived by unprovided dependants of a deceased member. The annual subscription for a member who at the time of his election is under 40 years of age is 2 guineas; if over 40 but under 50, 3 guineas; and if over 50, 4 guineas. There are special terms for life membership.

[1] Münch. Med. Woch., 1928, lxxv., 340.

WATER: ITS POLLUTION AND ITS PURIFICATION.

IN his opening address on May 14th at a conference held this week under the auspices of the Society of Chemical Industry, the chairman, Lord Desborough, referred particularly to the efforts of the Thames Conservancy, of which he has been chairman for many years, to maintain a clean river. In view of possible future demands for additional water-supplies, he called attention to the general need for safeguarding the purity of the rivers of this country. Sir Alexander Houston developed the subject in an address on "Water Purification." The daily consumption of water in the area of the Metropolitan Water Board is, he said, 260 million gallons, of which about 60 per cent. is drawn directly from the river Thames. Deep wells yield 34 million gallons, and this is the only portion of the supply which does not need purification. The Thames supply is treated by double filtration and is then chlorinated. Moreover, storage itself acts as a very effective system of purification. Raw water containing 1000 colon bacilli per 100 c.cm. finally yields water showing their absence in 100 c.cm. The steady decrease in the incidence of enteric fever in London in recent years was a tribute to the work of the Board. The excess lime method of treatment had given very promising results especially in waters which needed softening as well as purification. Mr. J. H. Coste, F.I.C., spoke of the pollution of tidal and non-tidal streams. He pointed out that until recent years pollution of our rivers and streams was caused mainly by domestic sewage and refuse, but the modern growth of industrialism had added new sources of contamination. Among these were refuse from beet-sugar works, from wool-washing, and from tanneries, distilleries, and milk products works, also tar-washings from roads. Organic pollution of a stream produced slight opalescence of the water, and the growth of green and blue-green algæ and, when pollution was more pronounced, the growth of grey woolly sewage fungus. The mud became black and fermentation occurred with the evolution of gas, which, rising in bubbles to the surface, might carry with it masses of peaty matter and the river might smell. The general effect of all pollution was to degrade or destroy normal life in the affected stream. A river received more or less organic matter as well as salts in the form of soil washings, and these supplied sufficient nitrogen, phosphorus, and silicon to enable diatoms and algæ to thrive, and to attract a population of protozoa and small crustacea which, with insect larvæ, seemed to form the food of most fish. A balance of population of all kinds was reached, the plants utilising the carbon of carbon dioxide and bicarbonates, and giving up the oxygen required by the animals. Mr. Coste

referred briefly to the work of Butcher and Pentelow on the river Lark in the Bury St. Edmunds district. Self-purification of a stream was effected by the oxidation of the organic matter causing the pollution, and at the temperature of natural waters this could only be brought about by the agency of micro-organisms. Apart from that liberated by photo-synthesis, the only source of oxygen available was the air, so that the rate at which water could absorb oxygen from the air was a governing factor in determining the effect of any pollution. This rate was comparatively slow, but at ordinary atmospheric temperature water saturated with oxygen contained by volume about 7 parts per 1000. The rate of re-aeration of a partially deoxygenated water was proportional to its lack of saturation due to the oxidising of the polluting organic matter. Thus a complete absence of dissolved oxygen showed that putrefaction might follow immediately; 70 per cent. saturation showed that oxygen is being used up at 30 per cent. of the possible rate, and so on. In a non-tidal stream the degree of pollution could thus be determined simply by examining the water above and below the point of pollution, but in a tidal river the problem was not so straightforward, since the tide would carry the polluting matter periodically up and down, producing a zone of pollution both above and below the outfall. Mr. Coste called attention to the work of the Ministry of Agriculture and Fisheries, which, in conjunction with the Standing Committee on River Pollution, is accumulating much information as to the condition of many rivers in this country, largely from the point of view of the fisheries. The chief causes of unfitness of water for fish-life are: (*a*) deficiency of oxygen, (*b*) presence of poisons, (*c*) absence of necessary salts, (*d*) unsuitable temperature. The oxygen requirements of trout have been studied by Gardner and Leetham. At 4·7° C. they require 102 c.cm. per kg. per hour and at 16° C. approximately twice as much. Many other varieties of fish have been investigated in this connexion, and as a general guide it may be taken that dissolved oxygen in the water of a salmon or trout stream should not be below 70 per cent., or below 50 per cent. for other fish. The 1868 Royal Commission on River Pollution resulted in the Rivers Pollution Act of 1876, which, in its several clauses, prohibited the addition to streams of solid or liquid polluting matter, unless the best practicable and available means were used to render it harmless. "Streams" were defined, under certain circumstances, to include the sea and tidal waters. In 1923 the Salmon and Freshwater Fisheries Act gave Fishery Boards powers to control the discharge of trade effluents from new sources. As to lessening existing pollution Mr. Coste expressed the opinion that there should be no difficulty in producing a harmless effluent from ordinary sewage, most of the trouble in this respect arising from inadequate or obsolete works, or lack of skilled supervision. The treatment of industrial trade effluents is as a rule more difficult, and each must be separately considered and dealt with in a manner appropriate to its own special circumstances.

THE CERTIFICATION OF LUNACY: LAYMEN KNOW BETTER.

Two inquests held on May 12th gave occasion for comment on the fact that certification under the Lunacy Act is far from final. Both were cases where it seemed not unreasonable to say that death resulted from the ignoring of expert medical opinion. One was an inquest at Hackney upon the death of a woman who threw herself from a window in the Hackney Infirmary. She had been under treatment at the German Hospital, where the resident medical officer had certified that she should be placed under proper control. She had been discharged from there to the care of her husband on the authority of the relieving officer who, after a visit to the hospital, had decided that it was not a case he could deal with under the Lunacy Act. Presumably the relevant enactments are Sections 13 and 20 of the Act of 1890; but at any rate the machinery which the law provides for preventing a certified lunatic from being at large and not under proper control and treatment broke down through no fault of the medical profession. The coroner, Dr. Edwin Smith, observed that by Act of Parliament doctors are given discretionary powers to say when an individual requires to be placed under proper control. "In my opinion they ought to be sufficient to satisfy relieving officers; it is unfortunate that in this case medical opinion was overridden but the relieving officer acted in accordance with his legal rights; if anyone is to be blamed, it is the framers of the Act, who could have closed the door to any possible overriding of a medical man's opinion by a layman not skilled in diagnosing medical diseases." The other inquest was at Eridge near Tunbridge Wells. A magistrate had refused to sign an order for a woman's removal to a mental hospital. Dr. Basil Pain, of Southborough, made a vigorous protest against the overriding of medical opinion, and Mr. Hillman the coroner, said there was no doubt that, if the magistrate had signed the order, the woman would be alive to-day. When medical practitioners are sued for damages for negligence in certifying that a plaintiff was insane, it has always been argued on their behalf that it is not the doctor's certificate but the magistrate's order which causes the lunatic to be placed under control. The case at Eridge strongly reinforces that argument. It is ridiculous to hold the doctor responsible if, as in these two cases, his opinion can be overridden.

A SURGEON'S SIXTIETH BIRTHDAY.

Prof. de Quervain's colleagues and pupils have taken the opportunity of his sixtieth birthday to issue a Festschrift or Jubilee book in honour of one who has served medicine, both national and international, no less than he has served the patients who have come under his care. Fritz de Quervain was born at Sitten on May 4th, 1868. After qualifying in 1894 he settled as surgical specialist in La Chaux-de Fonds, where he was surgical director of the local hospital until he was recalled to his old school at Berne as privat-docent. In 1910 he succeeded Wilms as professor of surgery in the University of Basle, and eight years later returned once more to Berne to succeed Kocher in the chair of surgery there. Over 200 scientific papers have left his pen, the larger proportion of them dealing with goitre, and then in descending order with tumours, tuberculosis, and surgical technique. His book on Surgical Diagnosis, which first appeared in German in 1907, has been translated into most of the languages of Europe and circulates freely among students and practitioners. Far from retiring into well-earned leisure, now he is a sexagenarian, Prof. de Quervain's colleagues congratulate him on retaining the zest and delight in work which has always been his characteristic. The Festschrift is to be published shortly, while the individual papers which it contains will appear in successive issues of the *Schweizerische Medizinische Wochenschrift*.

LYMPHADENOMA WITH RELAPSING PYREXIA.

AMONGST the cases described in 1832 by Thomas Hodgkin in his classical paper "Some Morbid Occurrences of the Glands and Spleen" we find one in which two attacks of intermittent fever occurred. In 1885 Osler called special attention to attacks of recurrent fever in Hodgkin's disease and pointed out that the glands increased in size during the fever and diminished again in the apyrexial intervals. But credit for the discovery of this phenomenon was subsequently given to P. K. Pel, who in the same year wrote of periodic rises of temperature in "a form of pseudo-leukæmia." His fame is shared by W. Ebstein, who in 1887 described "das chronische Rückfallsfieber, eine neue Infektionskrankheit." In a monograph [1]

[1] MacNalty, A. S.: An Investigation of Lymphadenoma with Relapsing Pyrexia. Ministry of Health Reports on Public Health and Medical Subjects. No. 50. 1928. 1s. 6d.

just published by the Ministry of Health, Dr. A. S. MacNalty supplies an extensive review of the literature of this condition and describes in detail 17 cases which have come under his personal observation. He finds that the cases fall into three clinical groups. In the first and most common type the external glands are enlarged, but not to a very great extent. During the pyrexial periods they may be painful, soft, and tender, but they do not become attached to the skin. The glands may remain of the same size during both febrile and afebrile periods, but occasionally some degree of enlargement is observed in the pyrexial periods with compensating diminution in the apyrexial periods. The second type is rare, but possesses distinct clinical features. In the apyrexial stage the glands may be small, freely movable and unattached to one another or to the skin. With the onset of pyrexia the clinical picture changes with marvellous rapidity. The glands swell up and a single gland may attain the size of a cricket ball; they are hot, painful, and tender to the touch, are apparently adherent to the skin, and the skin over them is red or purple and sometimes œdematous. They closely resemble suppurative glands on the point of discharging pus. But as lysis occurs the glands shrink down to their original size, and the pain, tenderness, and heat subside completely until the process is repeated in the next pyrexial period. The third type, also rare, is that in which the internal glands alone are involved. Relapsing pyrexia and progressive weakness from no discoverable cause are its salient features. Occasionally palpation of the abdomen or radioscopy of the chest may reveal the presence of enlarged internal lymphatic glands. The prognosis is bad in all three groups.

Cases of this disease often escape recognition owing to confusion with other maladies; of these tuberculous adenitis and chronic pulmonary tuberculosis present great difficulties in the differential diagnosis. When superficial lymphatic glands are enlarged and careful search fails to reveal any other tuberculous manifestation, one of the glands should be excised and submitted to microscopic investigation. This course should be pursued as a routine method, for, in the absence of other signs of tuberculosis, no other means of diagnosis is at present available. A mere pious opinion, unconfirmed by histology, that enlarged glands in the neck are due to Hodgkin's disease, may lead to prolonged radiotherapy and even to gross disfigurement before the condition is discovered to be tuberculous. Dr. MacNalty discusses at length the macroscopic and microscopic researches of D. M. Reed, F. W. Andrewes, W. T. Longcope, and H. M. Turnbull. We are grateful to him for his emphasis on certain points in the morbid anatomy—for example, the frequent occurrence of "Hodgkin nodules" in bone. But we regret that the Ministry of Health should have neglected this opportunity to give a lead in nomenclature and to allocate to this disease the title "Lymphogranuloma," which, on the showing of the pathologists quoted, it so clearly deserves.

THE IRISH FREE STATE REGISTER.

THE Register of medical practitioners in the Irish Free State is to be established on May 26th, after which date no one whose name is not inscribed therein will have the status of a medical practitioner in the territory of the Irish Free State. In the first instance the Register will include the names of all those whose names are on the General Register with an address in the Irish Free State, together with the names of any other practitioners registered in the General Register who may desire to be registered in the Irish Free State Register. All such names will be registered without fee up to May 26th. The names of those resident in the Irish Free State will be put on the list automatically, but all others must make application to the Registrar. After May 26th names will be registered only on the payment of a fee. It is important, therefore, for those who, not being at present resident in the Irish Free State, may contemplate ever engaging in practice there, to make application for registration at once. In particular practitioners residing in Northern Ireland whose practice frequently or occasionally carries them across the Border, should take the necessary steps to secure their professional status in the Irish Free State. The address of the Registrar is Room 123, Custom House, Dublin.

WE have pleasure in announcing that the Government duty on radium, which we deplored last week in view of the rapidly increasing therapeutic importance of the substance, is to be suspended. The Treasury have made an order under Section 10 (5) of the Finance Act, exempting radium compounds from key industry duty from May 15th to Dec. 31st, 1928, and we have every reason to believe that the duty will not be re-imposed.

THE Royal Faculty of Physicians and Surgeons of Glasgow have appointed Mr. George Henry Edington to be their representative on the General Medical Council.

A MEMORIAL tablet to Sir William Leishman will be unveiled in the Chapel of the Queen Alexandra Military Hospital at 11.30 A.M. on Saturday, June 2nd.

The Services.

INDIAN MEDICAL SERVICE.

THE NEW RULES.

IN a communiqué just issued by the Government of India, dealing with the reorganisation of the Medical Services in India (summarised on p. 1025 of our present issue), are set out the rules which have been framed in the interests of the Army, the Local Governments, and of officers themselves as an integral portion of the scheme. These rules will come into force forthwith.

1. Liability to serve on either civil or military side will be a definite condition of service for all future entrants to the Indian Medical Service.

2. No officer will be transferred to civil employment without the consent of the Government of India and Local Government.

3. An officer transferred to civil employment will not ordinarily be liable to be recalled to military employment (except on general or partial mobilisation) without the consent of the Local Government, but the Government of India will retain the power to recall an officer against the wishes of a Local Government in very exceptional cases of absolute necessity.

4. A Local Government will not be at liberty, without the consent of Government of India, to return to military employment an officer transferred to civil employment.

5. All officers in civil employment (including those now in the Service) about a year before the date on which they are expected to be due for promotion to the rank of colonel, will be required to state whether they wish to return to military employment, in order that they may be considered for promotion to administrative rank.

6. Those officers who elect to return to military employment will be recalled and employed in a position suitable to their rank without, however, any guarantee of eventual promotion.

7. The case of each officer will then be considered on its merits when his name comes up for promotion, and (*a*) those considered suitable for military promotion will be retained on the military side until promoted to administrative rank, after which they would not normally revert to civil employment, while (*b*) those not considered suitable for promotion will normally revert to civil employment or, subject to approval of military authorities, be given the option of remaining in military employment in the rank of lieut.-colonel until retirement.

8. Those officers who do not elect to return to military employment will either (*a*) sever their connexion with the Indian Medical Service and become members of the Provincial Medical Service on such terms as may be mutually agreed upon between themselves and the Local Government, in which case they will cease to belong to the War Reserve, or (*b*) will continue to belong to the Indian Medical Service, in which case they will be eligible for further promotion on the civil side, and will continue to belong to the War Reserve provided that they do not hold residuary appointments. Also they will be eligible to receive promotion in military rank, as at present, on the basis of the civil administrative posts which they hold.

9. An officer who desires permanent civil employment, but does not succeed in obtaining it, will be guaranteed employment in the Military Medical Services unless he is unfit for active service, or there is some other equally valid impediment to his being employed on military duties.

NAVAL MEDICAL COMPASSIONATE FUND.

At the quarterly meeting of the directors of the Naval Medical Compassionate Fund, held on April 26th, the sum of £175 was distributed among the several applicants.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. F. C. Robinson is placed on the Retd. List with the rank of Surg. Capt.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Sub-Lieut. H. S. Waters to be Surg. Lt.

ROYAL ARMY MEDICAL CORPS.

Maj. A. T. Frost to be Lt.-Col., vice Lt.-Col. D. O. Hyde (decd.).

Capt. (Prov. Maj.) C. H. G. Penny retires, receiving a gratuity and is granted the rank of Maj.

Lt. J. D. Borham is placed on the half-pay list on account of ill-health.

Lt. (on prob.) P. V. MacGarry from the secd. list is restd. to the estabt.

Temp. Lt. A. F. Downie relinquishes his commn. on account of ill-health.

Lt. on prob. J. M. Quinlan resigns his commn.

ARMY DENTAL CORPS.

Capt. A. E. Webb to be Maj.

TERRITORIAL ARMY.

Capt. A. Mead, late R.E., to be Lt., and relinquishes the rank of Capt.

Capt. W. K. Churchouse resigns his commn.

Supernumerary for service with the O.T.C.: W. A. Mackey supern. for serv. with the Med. Unit, Glasgow Univ. Contgt., Sen. Div., O.T.C.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Maj. G. B. Gill, from the Active List, to be Maj.

ROYAL AIR FORCE.

R. E. Alderson is granted a short service commission as a Flying Officer for three years on the Active List and is seconded for duty with the Victoria Infirmary, Newcastle-upon-Tyne.

Flying Officer P. O'Callaghan resigns his short service commission.

Flight Lt. T. Sheehan relinquishes his temporary commission on completion of service and is permitted to retain his rank.

AUXILIARY AIR FORCE.

The undermentioned Flying Officer (Honorary Flight Lt.) to be Flight Lt.: No. 600 City of London (Bombing) Squadron: N. P. Henderson.

TERRITORIAL DECORATION.

The King has conferred the Territorial Decoration upon Hon. Col. Attwood Thorne, V.D., Majs. Norman Mello Fergusson, John Francis Edmiston, Thomas William Selwyn Hills, James Alexander Stenhouse, and Frank Harris White.

COLONIAL MEDICAL SERVICES.

The following appointments have been made by the Secretary of State for the Colonies: Dr. V. F. Anderson, Assist. M.O., British Honduras; Dr. N. V. McKenna, M.O., Federated Malay States; Dr. A. F. Brown, M.O., Uganda; Dr. D. E. Wilson, M.O., Tanganyika Territory; Dr. A. V. Clemmey, M.O., Tanganyika Territory; Lieut. R. F. G. Dickson, Sanit. O., Kenya; and Dr. E. J. Blackaby, Dist. M.O., Cyprus.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLXXVI.

THE TREATMENT OF ANEURYSM.

THE history of aneurysm and its treatment is a long one. The experience gained from the study of this disease, from the observations of Morgagni in the eighteenth century to those made during and after the Great War, enables us to-day, by the correlation of sound clinical observations and accurate pathological investigations, to undertake the treatment of this condition in a rational way. But all measures are unsatisfactory when the disease is once established and palliation of symptoms must then be the aim.

Aortic Aneurysm.

Preventive Measures.—The very close relationship between aneurysm of the aorta and syphilis—for only in rare instances is it due to other causes—is an indication of the need to begin antisyphilitic therapeutic measures early, before the development of symptoms and physical signs which characterise the disease have become manifest. The routine radiographic examination of the chest in patients suspected of cardiovascular syphilis makes this possible. If this method of examination were widely applied, and followed by suitable treatment with mercury, iodide, and arsenic the development of aortic aneurysm in many patients would be prevented. Mercury should be administered either by inunctions, injections, or by the mouth up to the point of saturation, and continued with free intervals of two or three months in the year, if the Wassermann reaction remains positive, for five years or longer. The Wassermann reaction is not likely to become negative in more than a quarter of the cases treated. A negative test is an indication to withhold mercurial treatment for periods up to six months in the year. Potassium iodide, grs. 30 daily, is an equally essential therapeutic measure. Larger doses are not easily tolerated, for this drug must be given over as long a period as the mercury with the same free intervals. Each year for five years there should be given a series of six to eight intravenous injections of N.A.B., 0·6 g. at weekly intervals. An initial dose of 0·3 g. as a safety measure is to be recommended. These injections may be given in the out-patient department or in a consulting-room, and no special precautions regarding diet and rest are necessary. Accidents are not likely to follow the administration of this drug given in this way, and no symptoms of consequence should result from such treatment.

It is difficult, apart from specific treatment, to lay down any definite rules useful in the prevention of aneurysmal dilatation in a patient with specific aortic disease. Such instructions as are usually given to patients with chronic valvular disease due to other causes are helpful in arresting the progressive changes caused by intercurrent infections, focal sepsis, unsuitable work, and an unhealthy mode of living. An acute infection is an indication for rest in bed which should be continued for at least a week after the fall of the temperature to normal, the greater the constitutional reaction the longer should be this period of rest. Focal sepsis should always be treated with a view to removing a source of toxic absorption. It is important in choosing an occupation to select one that allows the patient to live within the limits of his cardiac reserve. It should not be arduous, nor expose the worker to cold, dampness, and heavy winds. Well-lighted and properly ventilated rooms, a climate without extremes of temperature, and an altitude not higher than 1000 ft. above sea-level, are points to be considered. If the patient has an anxious state of mind the judicious use of sedatives is called for; of

these bromides are of the greatest value in the treatment of nervous symptoms. They may be prescribed alone, or added to the iodide mixture, and in combination with nux vomica when exhaustion is noticeable in spite of the fact that the patient is physically at rest or has undergone only slight exertion.

Pain due to Structural Damage.—If it has not been possible to prevent structural damage of the aortic wall symptoms will appear. Pain of an anginal character may be the outstanding clinical feature of the disease at this time. It is usually associated with coronary and myocardial changes. The treatment is that of angina pectoris of specific origin. Inhalations of amyl nitrite are indicated when the pain is paroxysmal and occurs at rest. Sodium nitrite, grs. 2, two or three times daily, may prevent the onset of pain caused by slight exertion. Potassium iodide, grs. 30 daily, or in larger doses for a short time, is a remedial agent which sometimes proves satisfactory in treatment of this symptom. Mercury is of less value, but should be given a trial. In many instances physical rest alone brings relief, and a month in bed with a simple diet is a wise recommendation, particularly when there are peripheral vascular changes and a raised blood pressure. If arsenic is given it is advisable to keep the patient in bed throughout the whole period of the injections. Many patients show no improvement; a few have less pain, but in others the symptom may be aggravated. There is thus a certain risk attached to this form of treatment, and the results are, on the whole, unsatisfactory.

A long period of many months with complete physical rest, a depletion diet, and a low fluid intake is sometimes advised. This is not justifiable if undertaken as a curative measure, but if all other methods of treatment for the relief of symptoms have failed, such a régime, if it can be endured, may be tried.

It sometimes happens that the gradual increase in size of the tumour is arrested by the formation of an organised thrombus, which, spread over the inner surface of the aortic wall, may fill a large part of the tumour cavity. Acupuncture, electrolysis, the insertion of long coils of wire and other foreign bodies, are methods of treatment which have been employed with the object of stimulating artificially the coagulation of the blood—a natural healing process. Unsatisfactory results have led to the abandonment of these surgical measures.

Pressure Symptoms.—In the natural course of the disease the symptoms which dominate the clinical picture and are an urgent indication for treatment, are those caused by the pressure of the aorta on neighbouring structures in the chest cavity. The irritating paroxysmal cough, due to pressure on a bronchus, accompanied by breathlessness in all grades of severity, is a distressing symptom. Alterations of posture or rest may be tried, but often the discomfort is relieved only by the administration of opium in some form. A morphine or codein linctus and a sedative inhalant may help, especially when there is laryngeal palsy from paralysis of the recurrent laryngeal. A useful prescription is:—

℞	Codeinæ phosphatis	gr. ½
	Glycerini	♏ xv.
	Spt. chloroformi	♏ ii.
	Aquam	ad ℥ i.

Expectorants are useful when bronchiectasis is present and should be combined with some antiseptic if there is much toxic absorption. When there is pressure on the œsophagus food must be given in small quantities and in liquid form if it is to be easily swallowed. The choice of food which is not bulky and is sufficiently nourishing can in most instances be left to the patient, who will be guided by his own experience and tastes. The boring, agonising pain from pressure on the vertebræ, the spinal cord, the brachio-cephalic and other spinal nerve routes, is an indication for sufficient morphia to give the patient a few hours sleep. Sometimes relief can be obtained from rest in certain positions. One may be comfortable in a sitting posture, another only when lying flat on his back or side.

When the pain is less severe aspirin, phenacetin, and medinal in combination may have some effect and give the patient longer hours of sleep than he would otherwise have.

Slight bleeding from the aneurysmal wall should be treated by long and continuous rest; this should lessen the hæmorrhage, which may even cease for a time.

Aneurysm of the abdominal aorta, when below the level of the renal vessels, may give rise to pain with an iliosacral distribution. Proximal ligature for a few hours has led to a diminution in the size of the tumour and a relief of pain for a month or longer; fatal results of such ligature are frequent. Some successes have been reported, with fewer fatalities, from digital compression. Such surgical intervention is worth a trial when aspirin and morphia fail to relieve the pain.

Aneurysms in Peripheral Vessels.

When a peripheral vessel is the seat of an aneurysm of specific origin, surgical treatment may be recommended with the hope of obtaining a good result. The technique is intricate, particularly when a subclavian or iliac vessel is involved; the operation takes a long time, and careful aseptic precautions are necessary to avoid gangrene or some other serious disturbance of the peripheral circulation. Proximal ligation of the vessel, or ligation of the proximal and distal ends of the aneurysmal sac are operations devised to obliterate the sac and not interrupt the peripheral circulation in this region. Such operations are possible in an area where there are other vessels which can carry on the circulation interrupted by the occlusion of the aneurysmal sac. In other regions ligation is not feasible because of the anatomical distribution of the vessels; here complete excision of the sac and the union of the proximal and distal ends of the vessel by suture has been attempted with success in a large number of reported cases. Only those with a knowledge of the special technique required should attempt this operation. When the seat of the aneurysm is a small vessel it is sometimes possible by external pressure for many hours to obliterate permanently the aneurysmal sac.

These are operative measures valuable in the treatment of aneurysm of peripheral vessels of specific congenital or traumatic origin. Such treatment is not indicated in mycotic aneurysms of these vessels when part of a general infective process, as in malignant endocarditis. The disease is anyhow likely to be a fatal one, and the aneurysm is an accident unlikely to affect its general course.

Arterio-venous Aneurysms.

Arterio-venous aneurysms, the result of gunshot wounds, were frequently observed during the war, when many of them were treated surgically with success. In civil life they are generally of traumatic origin. Some are congenital. When possible, the sac should be excised. Proximal ligation of the sac is a simpler operation, but gives less satisfactory results owing to the danger of embolism. This is an especially important consideration when the vessels of the neck are involved. The obliteration of the sac by ligation of the proximal and distal ends avoids this danger, and the possibilities of gangrene from the unsuccessful excision operation. It should be remembered that an arterio-venous aneurysm leads to enlargement of the heart and probably myocardial disease from malnutrition of the heart muscle. There is some evidence to support the view that the relationship between an arterio-venous aneurysm and cardiac disease is a close one, resembling in many ways the reaction of the heart muscle to a defective aortic valve.

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THE HARVEY CELEBRATION:

ORGANISED BY THE ROYAL COLLEGE OF PHYSICIANS OF LONDON.

A CELEBRATION of the tercentenary of the publication of "De Motu Cordis" was organised by the Royal College of Physicians of London to take place between May 14th and 18th. The programme of arrangements issued by the College commenced with the following summary of Harvey's life, and of the circumstances of the great discovery, while the connexion of the founder of physiology with the College was set out alongside full notes of the history of the College.

WILLIAM HARVEY.

William Harvey was born at Folkestone in 1578 and educated at the King's school of Canterbury and afterwards at Caius College, Cambridge. After graduating in Arts at Cambridge in 1597 he set out for Padua, where he studied medicine for four years under Fabricius, Minadous, and Casserius, and in 1602 received from that University the diploma of Doctor of Medicine, which is now in the possession of this College. On his return from Padua Cambridge admitted him to her doctorate, and in 1607 he became a Fellow of the Royal College of Physicians, and in 1615 its Lumleian Lecturer. Meantime, in 1608, he had received a reversionary appointment as Physician to St. Bartholomew's Hospital, which became absolute in 1609. As Lumleian Lecturer Harvey expounded year after year within the College his doctrine of the circular movement of the blood, before he gave it in its completed form to the world at large, in 1628, by the publication at Frankfort of his "Exercitatio Anatomica de Motu Cordis et Sanguinis," dedicated to King Charles I., a copy of the first edition of which may be seen in the Library of the College. (Fig. 1.)

In this volume, addressing the President of the Royal College of Physicians and his other fellow physicians, he says:—

"I have already and repeatedly presented you, my learned friends, with my views of the motion and function of the heart in my anatomical lectures: but having now for nine years and more confirmed these views by multiplied demonstrations in your presence, illustrated them by arguments, and freed them from the objections of the most learned and skilful anatomists, I at length yield to the requests, I may say entreaties, of many, and here present them for general consideration in this treatise."

The manuscript notes of the course given in 1616 may be seen in the British Museum, or in excellent fascimile reproduction in a volume prepared under the supervision of a Committee of the Royal College of Physicians.

During the Civil War Harvey was often in close attendance as physician on King Charles I., both on the field of battle and at the Royal Headquarters at Oxford, where he became Doctor of Medicine in 1642, and Warden of Merton College in 1645 for a single year. In 1648 he retired from active practice, and spent the evening of his days at the house of one or other of his merchant brothers, more particularly at the Roehampton house of Eliab, who was a member of the Grocers' Company. Here he resumed his former work on the Generation of Animals, which was published in 1651 through the instrumentality of Sir George Ent. In this same year Harvey offered to build a Museum for the College, which was to be at once a library and a repository for simples and rarities. In 1654 the completed building was handed over, together with the title-deeds, to the College. In the same year the Fellows elected Harvey, who had already been Censor in 1613, 1625, and 1629, and Treasurer in 1628 and 1629, their President, but age and failing health constrained him to decline the office. Nevertheless he continued to discharge his duties as Lumleian Lecturer until 1656, when on laying down this post he crowned his unceasing generosity to the College with the gift of his partimonial estate at Burmarsh, in Kent. In his Deed of Gift he provided money for the stipend of the Librarian and the upkeep of the Library, and for an annual Banquet and Oration. He enjoined the chosen Orator to commemorate the benefactors of the College, stating what they have done for the College and calling on others to follow their example, and to exhort the Fellows and Members of the College to search and study out the secrets of nature by way of experiment, and to continue in mutual love and affection among themselves for the preservation of the dignity of the College. The Banquet and the Oration are held in the College annually on St. Luke's Day, Oct. 18th.

In 1657 this passionate searcher after truth, this generous, unworldly, religious man died, where he had chosen to live, in the house of one of his beloved brothers, that of Eliab, at Roehampton.

The prompt and universal acceptance of Harvey's discovery as an indisputable anatomical fact was hindered by the circumstance that he left one detail in the circular movement of the blood for future demonstration—namely, the precise mode of transference of the blood from arteries to veins. Malpighi made this known to the world in 1661, having seen by the aid of the microscope the passage of the blood through the capillaries of a frog's lung. He even caught a glimpse of the blood corpuscles in actual transit, but it remained for Kircher, Swammerdam, and Leeuwenhoeck to give them bodily form. As Malpighi was born in 1628, a tithe of homage in this Tercentenary Celebration may well be bestowed on him.

Surprise is sometimes expressed that the physiological harvest of Harvey's discovery was delayed so long in its ingathering. Harvey was well aware that this discovery touched only the fringe of the much wider problem of the purpose of the circulation. For this reason he styled his "De Motu Cordis" an Anatomical Exercise, and promised further treatises on Nutrition and Respiration, neither of which was destined to be born of his hand.

Before Harvey, the prevalent belief had been that the food became converted in the intestines into chyme, which was carried by the portal vein to the liver, and there converted into blood and endowed with "Natural Spirit," or the property of growth. Part of this low-grade blood was carried from the liver by the hepatic veins and the inferior vena cava to the right ventricle, where it gave off impurities by way of the pulmonary artery and the lungs, and after this purification ebbed to and fro for purposes of ordinary nutrition. A very small part of this venous blood did, however, pass through invisible pores in the muscular septum to the left ventricle, where it was mixed with air drawn in from the lung by way of the pulmonary vein, by the agency of active traction of ventricular diastole. Thus was produced a high-grade arterial blood, instinct with the principle of life, the "Vital Spirit," which ebbing to and fro in the arteries endowed the various organs with function. From such as reached the brain was distilled the noblest essence of all, the "Animal Spirit" or breath of the soul, which when carried out from the brain by the nerves initiated motion and sensation and the highest functions of the organism.

Harvey's demonstration that the same blood flowed perpetually in two interlacing circuits, from right to left and from left of the heart, visiting in its course the remotest portions of the body, swept away at one stroke the very foundations of all this fantastic speculation, and paved the way for a scientific explanation of the purpose of the circulation. So it is that the publication of the "De Motu Cordis" has been rightly acclaimed as The birthday of Physiology.

Historical Notes on the Royal College of Physicians of London.

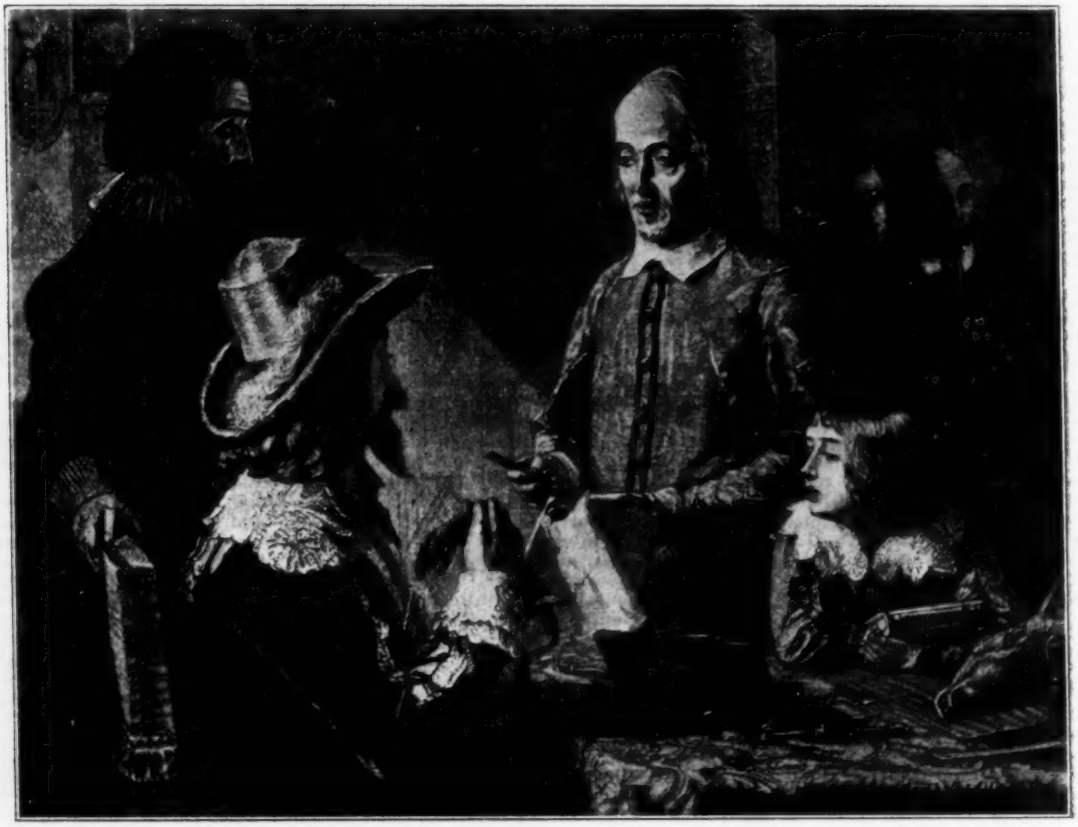
The following notes recapitulating the mainstay of the Royal College of Physicians have also been extracted from the very informing programme:—

The Royal College of Physicians was founded by Thomas Linacre who, with the assistance of Cardinal Wolsey, obtained from King Henry the Eighth a Royal Charter, dated September 23rd, 1518, which granted the power to form a College for the purpose of controlling and protecting all those who were engaged in the practice of medicine in the City of London and for seven miles around. By a subsequent Statute, 14 Henry VIII, the powers of the College were extended so that authority was exercised over all who practised medicine throughout England, with the exception of those who were doctors of medicine of Oxford and Cambridge. Six physicians—viz., John Chambre, Thomas Linacre, Ferdinand de Victoria, John Francis, Nicholas Halsewell, and Robert Yaxley were named in the Royal Charter as the first Fellows of the College, and power was granted to them to elect a President, to add to their number, to make by-laws and regulations, and to license all those who wished to practise medicine in the City of London and seven miles around.

Thomas Linacre, the founder, was chosen the first President of the College which owed its inception almost entirely to his forethought and energy. Linacre had travelled in Italy, and had studied at several Universities in that country, especially at Padua. While in Italy he had been impressed with the care and attention bestowed upon the study of medicine, and he, no doubt, compared this activity with the lack of enthusiasm in England. As a result of these impressions he decided to found in England a College designed to control, foster, and promote the study of medicine. When he founded the College, Linacre had in mind as a model the medical schools in Italy, and so it comes about that the constitution and composition of the College show some resemblance to those of the Italian Universities of Linacre's day. The College was founded by Linacre, but its struggles for existence might have ended in failure but for the devotion and energy of Dr. John Caius who was President for ten years during the years 1555–1572. Under his firm and sagacious rule the College grew and became firmly established. The debt it owes to Caius can hardly be measured.

The College Houses.—The first meetings of the College, for the transaction of business, were held in Linacre's house in Knightrider-street, in the City, and here it remained until 1614, when a new house was erected at Amen Corner, with a garden, on the site of the present house of the Canons Residentiary of St. Paul's. This College House, which was in occupation in Harvey's time, was burned down in the Great Fire in 1666, and in 1674 the College removed to a new building in Warwick-lane in the

Fig. 1.



Harvey demonstrating to King Charles I. the rôle of the heart in maintaining the circulation of the blood. From the picture by Robert Hannah, 1848, in the possession of the Royal College of Physicians of London.

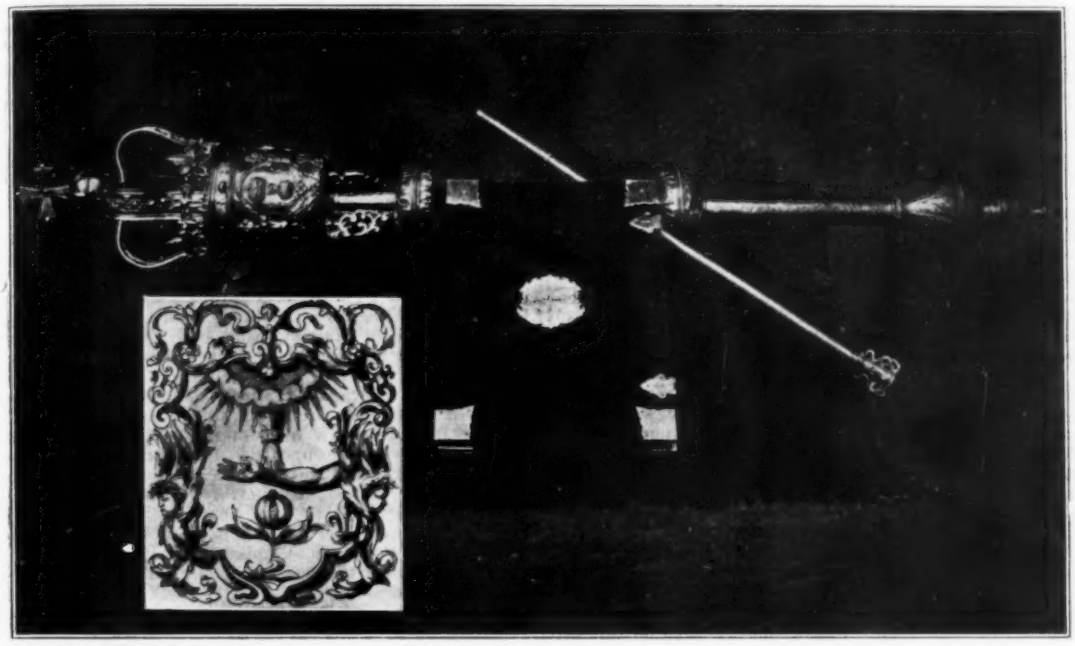
City, which had been built from the designs of Sir Christopher Wren. Here it remained until 1825, when it removed to the present building which was designed by Sir Robert Smirke, and erected on a site belonging to the Crown, but leased to the College for 999 years.

The Library.—The medical books of Linacre, bequeathed by him to the College, formed the nucleus of the Library, and by gifts and bequests it increased until in 1660, the date of the first Catalogue, it numbered some 1300 volumes. In 1666 the Library was destroyed in the Great Fire, and only 140 volumes were saved. After this disaster the Marquess of Dorchester, a Fellow of the College, and possessed of one of the finest private Libraries in England at that time bequeathed the whole of his books, amounting to some 4000 volumes, to the College. To this bequest the great value of the Library is largely due. Other valuable bequests were made from time to time, and in 1921 the late Dr. Lloyd Roberts bequeathed the whole of his Library of early printed medical books to the College, a bequest second only to that of the Marquess of Dorchester. The Library now contains about 50,000 volumes, of which more than 100 were printed before the year 1500, and over 4000 before the year 1600. The Library is not confined to medical books alone, for it contains sections comprising early editions of the Classics, Theology, Civil and Canon Law, Mathematics, and the Natural Sciences. It also contains about 350 Manuscripts, some of them of great interest, a fine collection of some 5000 engraved portraits of medical and scientific men, and a large series of Charters and other legal documents relating to the history of the College.

Portraits.—The College possesses 130 portraits in oil of distinguished Fellows of the College, and the collection is representative of many of the portrait painters in England during the last three centuries. Besides these the College contains many busts and some miniatures and medallions.

Silver.—The College collection of Silver Plate, with a few notable exceptions, dates from the beginning of the eighteenth century, and has been formed by gifts from the Fellows from time to time.

FIG. 2.



The Insignia of the College. The inset represents the Arms of the College as depicted in *London's Armoury*, by Richard Wallis.

The Insignia and Arms of the College.

The Insignia of the College (Fig. 2), which are figured in the programme, consist of the Mace in silver-gilt, presented in 1683 by Dr. John Lawson, a former President of the College, the Caduceus, a silver wand carried by the President on official occasions, and made for Dr. Caius in 1556, the Book of the Statutes, and the velvet Cushion on which the Book rests.

THE RECEPTION BY THE KING.

The celebration in honour of the tercentenary of the publication of the "De Motu Cordis" was formally opened on Monday, May 14th, when the delegates from all over the world who had accepted the invitation of the Royal College of Physicians of London were received by the King at Buckingham Palace at 11 A.M. There were presented to the King upwards of 100 delegates representing nearly 30 countries, by Sir JOHN ROSE BRADFORD, whose formal introduction of them was in the following terms:—

"By Your Majesty's gracious invitation we are gathered here to-day to celebrate the Three Hundredth Anniversary of the first publication of William Harvey's famous book, the so-called 'De Motu Cordis,' in which he announced to the whole world the discovery already made known by him to his own medical colleagues in his lectures before the Royal College of Physicians. This book Harvey dedicated to His Majesty King Charles the First.

"Harvey's demonstration that the same blood must flow unceasingly round and round the body, visiting its remotest parts, swept away the visionary speculations of his predecessors and paved the way for a scientific explanation of the purpose of the Circulation of the Blood. Thus it is the publication of the

'De Motu Cordis' has been rightly acclaimed as the Birthday of Physiology and of Scientific Medicine.

"Science knows no boundaries of race or nation, and obedient to this doctrine Representatives of Medical Science from many lands have joined with Representatives of the Universities and Scientific Societies of this Kingdom and of the Dominions of your Empire Overseas to pay homage to the memory of this great English Man of Science.

"Your Majesty, in identifying yourself with this Commemoration of Harvey's work, is but treading in the footsteps of your Royal Ancestors. King James the First and King Charles the First both set a true value on Harvey and made him their own Physician, and the latter supplied him with the bodies of deer from the royal herds for his anatomical studies. Harvey constantly brought to King Charles natural curiosities for his inspection, and exhibited to him much of his experimental work. Together also they shared the rare experience of watching the beating heart in a human subject through a defect in the chest-wall produced by disease.

"In the Civil War, too, Harvey stood by his Royal Master and was present at Edgehill, in charge of the young princes, Charles and James, and afterwards at Oxford, where by Royal Mandate Harvey was appointed Warden of Merton College.

"As President of the Royal College of Physicians of London, on whose roll of Fellows Harvey stands out as its brightest ornament, I have the honour to express to Your Majesty the dutiful thanks of every member of this Delegation for the honour of this Reception, by which your Majesty to-day participates in the Celebration for which we are all assembled in the Capital of Your Empire."

The King's Reply.

"I thank you sincerely for your Address. It is a great pleasure to me to join with my people in welcoming the many distinguished men from my Overseas Dominions, and indeed from all parts of the civilised world, now assembled in London in honour of the Tercentenary of Harvey's immortal discovery.

"I appreciate the comparison drawn in your Address between my part in to-day's ceremony and the action of my predecessors, who befriended Harvey in his life-time. I am proud to think that the Kings of England of that day, recognising Harvey's great gifts, granted their patronage and help in his work, and are thus entitled to the credit of having contributed to the new birth of medical science.

"The importance and value of William Harvey's work cannot be exaggerated. In an age when physiological knowledge was in a state of darkness and chaos, he laid the essential foundation for a science of physiology by demonstrating not only the fact of the circulation of the blood, but the manner in which it took place. He discerned and taught that the true method of scientific progress is by observation and experiment, and it is for this, and not merely as the author of a single discovery, however brilliant and fundamental, that we to-day do honour to the name of Harvey.

"Science, as you truly say, knows no boundary of race or nation. Harvey's own career is an instance of this. He was a graduate not only of our own Cambridge, but also of Padua, which Ancient and illustrious University I am happy to see represented here to-day. His great book was published in Latin, the universal language of learning, and won acceptance for itself and fame for its author throughout Europe. But though science is international, each country's contribution may still bear the marks of the national character. And here we may proudly note that Harvey, in his three-fold capacity as a successful physician in private practice, as physician to St. Bartholomew's Hospital, and as an eminent student and investigator, foreshadowed what is now, and has long been, characteristic of British physiology—the combination of research with medical and surgical practice, allied with a generous devotion to the service of the poor in the public hospitals."

The Reception by the Royal College of Physicians.

The delegates were received at the Royal College of Physicians, Pall Mall, at 3 P.M., when academic robes were worn, the library of the College presenting a brilliant spectacle. Addresses were received from universities and academies throughout the world, each delegate as his name was called shaking hands with the President, and received from him a facsimile of the "De Motu Cordis." The President was seated flanked by the Censors with the insignia of the College arranged before them.

The President, having introduced the guests of the College to the delegates, stated that the object of the celebration was to pay a tribute of respect to Harvey and to the wonderful scientific genius which he had displayed in bringing about his great discovery.

Honorary Fellowships.

The PRESIDENT then addressed the assembly. He said that the College authorities felt that it would be apposite to institute Honorary Fellowships on this occasion. There had previously been a few Honorary Fellows, for instance Lord Dorchester, a contemporary of Harvey, was such, and one of the former presidents had instituted on his own initiative the election of Honorary Fellows. But, although the late King Edward VII. had accepted a Fellowship, in recent years this precedent had not been followed, so that it was a new movement on the part of the College to revive or institute the honour, which on this occasion would be conferred upon the Earl of Balfour, Sir Ernest Rutherford, and Profs. Ivan Pyotrocitch Pavloff of the Academy of Sciences of Leningrad, and Karl Friedrich Wenckebach, of the Academy of Sciences, Vienna.

At the close of the ceremony the following eulogies were delivered:—

Eulogy of Harvey by Sir Charles Sherrington.

In William Harvey we bear in remembrance one who was Fellow, Censor, Treasurer, and, for a day, President-Elect of this College; its benefactor by gift and bequest, and part and parcel of its pride and honour being for ever a living spring of knowledge. Each year he is commemorated in this place by the Harveian Oration, with its historic and distinguished roll of orators, among them yourself, Sir, not two years ago.

Now Time brings three and a half centuries since his birth and three from his unforgettable book: and this welcomely representative assembly is met to bear witness to the book and to the man. A book cannot be all of the man, yet, in science, even as in letters, the book inalienably is of the man. His book embodies not only Harvey's thought, but what his hand at behest of his thought contrived, searched for, and found.

At the Renaissance the spirit of man turned from an old order, cabined within a rounded scheme of things, to move and inhabit for itself afresh. That new day broke first on scholarship and letters. In science it reset the mechanics of the stars before it bent to the study of terrestrial life. In this latter it adventured first upon the outward forms of organ and organism. Later it turned to explore their inward meaning, the living function itself. For this last step the Renaissance *is* William Harvey.

Yonder his picture hangs. Stripping from it some years we may see him, at two and twenty, hair "long and curling," eyes "black and very full of spirit," listening in the steep theatre at Padua to Fabricius, who expounds in Latin the parts displayed below on the anatomy table.

If to us the scene seem remote, being three centuries back, to the young Harvey then and there three centuries seemed little. Aristotle and Galen in living authority were for him as present in that room as was Fabricius speaking. Why, therefore, so remote to us much that then surrounded the young Harvey? The answer comes: Harvey's own work changed the perspective of the whole.

Harvey was pupil and fervent admirer of the masters of antiquity. But his famous exhortation to others,

to search out Nature by experiment, he addressed early to himself. Hence, after Cambridge and Padua, the year of Shakespeare's death finds him as Lumleian lecturer of this College, teaching from first-hand knowledge the surprising heresy and the inviolate truth that the whole blood as one blood circulates the body in two successive circuits driven by a valved muscular pump—no other than that age-long thrice-veiled mystery, the heart!

Harvey for this discovery employed no means nor appliance other than had been at men's disposal from classical antiquity onward. His was the triumphing of the new spirit unaided save by its own freedom. He was the coming of modernity. Not that he was modern utterly, for he let ten years pass between his discovery and sending it to press. A slender book; most of its references to authorities dead 19 to 15 centuries before, but in observation its every statement holding to this day. The message of its 49 small pages engendered modern medicine.

The message had to fight its way, and in some quarters did so slowly. Even after 70 years the learned Abercromby's "De Pulsus Varietate," dedicated to Robert Boyle, wrote: "More obscure than the origin of the Nile is, in my opinion, the origin of the pulse."[1] Harvey relied on the truth and the future. He could hardly have guessed the long train of gifted men who were to extend his work generation after generation onward unbrokenly to Einthoven and Starling, so freshly lost to us, and to those others, no less active, with us to-day and of his own College, Dale and Lewis, brilliantly extending by their discoveries his discovery here in this his city where he lived and taught.

Self-restraint speaks in Harvey's book. To supply in 49 small pages a refutation of 19 centuries' tradition of continuous error argues a fine restraint. Yet, once at least, self-revealingly he gives his spirit rein. Relaxing his resolve to forego treating of the circulation's purpose, he forecasts the uses which must accrue to the blood in virtue of its circulating; in that forecast he bursts forth into a luxuriant passage. Its imagery flashes on us a Harvey, other than the Harvey austerely proving a solved problem, a Harvey fired with constructive imagination facing a problem fresh and still to solve; that same Harvey who had asked the heart valves "Wherefore?" and they had told him; the vein-valves and the heart's motions, and they had told him; a Harvey who on his notebook's cover in red ink wrote as motto: "Everything is full of Jove!" This Harvey, too, had its part in Harvey the discoverer.

Forerunning at two centuries' distance almost word for word the thought of Claude Bernard, Harvey averred: "the very vegetative acts of each item of animal structure compass results as it were by art, election and foresight." Harvey's philosophy of Nature was one of the deep springs of his enthusiasm. Reading his favourite Virgil he would throw it down, exclaiming in admiration, "The man hath a devil!" May we not of Harvey himself say in admiration, rephrasing his other phrase, "The man is full of Jove!"?

Mr. President, the work of Harvey, the spirit of it no less than the import of it, provides his eulogy and makes superfluous all other. His great discovery, aside from its intellectual worth, secured an item of knowledge, than which no other single item has so served to grow as from a seed medicine as we now know it. And to engender medicine is to engender a whole world of correlated knowledge and also of beneficence. The circulation of the blood and the meaning of the heart! May we not affirm that modern medicine does in fact start there? And, that so, we envisage Harvey in his perspective through the ages. Founder of modern medicine! He would himself have felt no term can carry richer or lovelier praise from a grateful world.

[1] "Nili fontibus meo judicio obscurior pulsus origo est," Observationes de Varietate Pulsus. By David Abercromby. London, 1685.

In Memory of William Harvey.

By Prof. Franz Keibel,

ANATOMICO-BIOLOGICAL INSTITUTE, UNIVERSITY OF BERLIN.

The task has fallen to me to say a few words upon the anatomical relations of William Harvey's work, and first we must note shortly the relations of physiology to anatomy. Both sciences have a common origin and for this reason are closely bound together; while even in their terminal ramifications they are at the present day not yet entirely separated. I recall the fact that the wide field of joint physiology is filled for the most part by anatomists.

And so it was, even in higher degree, in the days of William Harvey, and we know that Harvey was not only a supreme experimental physiologist, but also an admirable anatomist. He says of anatomy that it should be learned "not from books but from dissections, not from philosophical dogmas but from investigation of the structure of the body."

Naturally Harvey, like all great discoverers, had his forerunners and left his successors to complete his work, but it is noteworthy that Andreas Vesalius, the great reformer of human anatomy, can only in a very limited degree be counted as a discoverer in spite of his excellent description of the heart. Vesalius could find no holes in the ventricular septum; despite this he assumed the passage of spirits through it, in this case agreeing with his great opponent Galen.

As Harvey's forerunner we must regard the unfortunate Servetus, who in his theological tract "Christianismi Restitutio" (1553) correctly described the lesser or pulmonary circulation. His work was burned with its author, but it has recently been conjectured that it came to the knowledge of Realdus Columbus, who describes the lesser circulation in the same way as does Servetus. But R. Columbo makes no mention of Servetus. Also as forerunners of Harvey should be named Cæsalpinus, Cannani, and Harvey's teacher, Fabricius, from Aquapendente, in Padua. Cannani had discovered the valves of the veins; Fabricius prints admirable illustrations of them. Fallopius should also here be named.

All these had the key of the great riddle in their hands, the riddle of which Harvey says himself at the beginning of his studies with Fascatorius, that "it is so difficult that God alone knows the solution." They knew a series of isolated facts through whose correct employment for inductive conclusions they might have solved the riddle of the function of the heart, but they failed to draw these conclusions, and so there belongs to William Harvey the full glory of having discovered the circulation of the blood and the function of the heart.

As followers-on of Harvey's work should be named Marcellus Malpighi, the discoverer of the blood capillaries, and Aselli, Pecquet, and Rudbeck, the discoverers of the lymph and chyle ducts. Harvey indeed freely uses the word "capillaries," but only for the finest branches of the arteries. He had rigidly deduced the connexion of the arteries with the veins, but never demonstrated it; the demonstration of this connexion was achieved by Malpighi, who employed the lung and urinary bladder of the frog. The discovery of lymph and chyle ducts are to be regarded as important supplements to the doctrine of the circulation of the blood. Malpighi's discovery falls in the year 1661. Harvey did not live to see it, having died in 1657, four years previously. In 1665 came Malpighi's discovery of the blood corpuscles.

A certain time was still needed before the doctrine of the circulation of the blood was accepted, so deeply rooted were the errors of Galen and so great the respect for the old physician who for centuries had been worshipped as a saint.

And naturally there now arose objectives and new lines of inquiry. I may mention here only the atrio-ventricular bundle, whose discovery by William His, junr., has been made during the lifetime of most of us, the bundle that has brought the most important revelations of the function of the heart.

Nor must we forget that Harvey was a warm champion of the comparative view and is therefore to be regarded as one of the founders of comparative anatomy.

But even the most recent researches into the heart and circulation rest on the foundation that Harvey with insurpassable and masterly wisdom laid down, and this foundation will endure so long as our learning endures.

PROF. CHAUFFARD'S TRIBUTE.

Prof. A. Chauffard (Paris) expressed his gratification at being invited to pay a tribute to Harvey, not only as delegate of the Académie de Médecine, but on behalf of the French medical profession as a whole. To speak of Harvey and his book was a real joy to the physician. The general character of his scientific work was remarkable for three things—its courage, its maturity, and its modernity. Although the first blow against Galen's doctrines had been struck by Vesalius in 1555, and Servetus and R. Colombo had partly foreseen the existence of a pulmonary circulation, Harvey's theories ill accorded with current opinion and raised a storm of opposition. Willis said that no man who had reached the age of 40 years could be found who would adopt them. A work of courage, Harvey's book was also mature, for the oral report on his investigations had been given before the Royal College of Physicians in 1616, 12 years before its publication. The interval was filled by the long period of silent research, necessary to all great discoveries, in which the proofs were made complete and final. Genius might be called "a long patience." The third feature of Harvey's work was its modernity, for none of our present methods, such as could be known and employed at his epoch, were unfamiliar to him. Furthermore, he well realised certain of the clinical results of his discovery, though it was left to Lavoisier, a century and a half later, to reveal the physiological functions of the circulation of the blood. Harvey's book, however, contained more than the story of the circulation; it opened the road for all future research. New conquests had since been made—auscultation, graphic registration, radiography, electro-cardiography, and the gauging of arterial tension—but all these acquisitions of modern science had served to complete and crown Harvey's discoveries. They had contradicted and modified nothing. Nor must he be remembered only as the discoverer of the circulation; his published work was of infinitely greater scope, and even that was incomplete, since many of his writings had perished. What he wrote abounded in the astonishing variety and novelty of his period, and the man was in no way inferior to his work. Thus he had been one of those rare geniuses who are true benefactors of mankind.

A CONGRATULATION FROM ATHENS.

The Greek Minister in London, M. Caclamanos, representing the University of Athens, presented on behalf of that University an address written in ancient Greek, and illuminated on vellum, the case bearing on it the owl of Pallas. The gist of the address was to trace the origins of medicine, in accordance with Galen, from chance discovery to systematised pursuit of an art, and thence to instructed teaching in treatment. Egyptian practice, the oldest in medicine, was held to have been based on casual findings; while the medicine of Hippocrates was based on reason, experiment, and the study of nature. With Galen we have the art and science of medicine divided into three sections, dealing with the chemical constituency of the human subject, the formation of the embryo, and the investigation of the structure by anatomy. Harvey's knowledge was based upon the study of these principles, and after 17 years of labour and experiment he discovered the circulation of the blood. The English nation did right to celebrate the three-hundredth anniversary of the writing of the famous treatise "De Motu Cordis," and the University of Athens was joining in the congratulations.

BANQUET AT THE GROCERS' HALL.

On the evening of Monday a banquet was given by the Master and Wardens of the Worshipful Company of Grocers in their splendid City hall, when the Master, Lieut.-Colonel Francis W. Heath, presided over a company, which included as well as the delegates, Ministers, and Peers, the Master of the Rolls, the President of the Royal Society, and the official heads of many seats of learning, of the medical corporations, and of the medical services.

After the loyal toasts had been drunk, the health of the Delegates was proposed by Lord Hanworth, the Master of the Rolls, who briefly set out the story of the Grocers' Company from its inception 500 years ago, indicating also that the site on which they were dining, though not the actual hall, had been occupied by the Company since 1653. William Harvey, he added, might well have dined here with his brother Daniel, who was a member of the Guild. Pointing out that the term grocer implied one who dealt "en gros," he showed how the trading company had developed as a Guild and had come to acquire the position to which it had attained as a civic force and as a great administrator of money in the cause of charity and education, while the specially medical nature of their activities had been inherited from a previous union with the Society of Apothecaries. He welcomed, in cordial terms, the representatives present from 28 countries, assembled to-day in honour of Harvey, whom he ranked with Newton and Darwin as men who had been determined "to learn what is true that they might do what is right." He referred to the splendid courage showed by Harvey, not only in his defiance of tradition when working along his individual lines, but in his attitude towards criticism later. To intelligent inquiry he gave reasoned reply, but to wild animadversions like those of a certain Dr. Primrose, he replied not at all—in the words of Wordsworth "a primrose by the river's brim, a yellow primrose was to him, and it was nothing more." He coupled with the toast the names of Prof. J. Van Der Hoeve, of Amsterdam, and Prof. G. H. Monrad-Krohn, of Oslo, and suggested that the former would be in his element in an after-dinner speech, as he was an authority on mental states in association with digestion.

Prof. Van Der Hoeve replied in excellent English, with an eloquent acknowledgement of the hospitality offered to the delegates, both by the Grocers' Company and elsewhere, and said that he looked forward to the visits to be paid to Oxford where Harvey had been Master of Merton, and Cambridge, where at Caius he had received his education.

Prof. Monrad-Krohn associated himself with the sentiments of the previous speaker, and, going on to refer to the last time when he was in England as a delegate to the International Congress of Medicine in 1913, said that he hoped that those international meetings would soon be revived again. He was moved, he said, to this reflection because Harvey must always be regarded as an international figure who, though educated primarily in England, owed to the continent, especially to Padua, much of the learning which enabled him to make his grand discovery. But Harvey, he held, illustrated in a marked manner the British mind, namely that independent attitude which refuses to accept the conclusions of others simply because they are receiving common acceptance.

The toast of "Prosperity of the Worshipful Company of Grocers," was proposed by Sir John Rose Bradford, who pointed to the great record of charity and hospitality possessed by the Company throughout its long life, and never more splendidly exemplified than in this banquet given to the leading medical representatives of 20 countries, and the official heads of the medical profession in Great Britain. The guests were thus representative of medical education all over the world, and this was appropriate for the hospitality of the Grocers' Company, inasmuch as, renowned though all the City

Guilds were for the exercise of this virtue, no Guild in London had done so much for the cause of medical research as the Worshipful Company of Grocers. For the past 40 years the Company, he continued, had assisted others to play Harvey's great game of research, both by their foundation of the Grocers' Research Scholarships, and their noble generosity to the Lister Institute, a generosity which had been exercised in a particularly timely manner, seeing the damage that was being done by prejudice to the cause of science in this country.

The Master, in a deliberately brief response, emphasised the pride which the Company took in furthering the cause of medical research and wished that the direct descendant in the female line from Harvey, the Rev. Rossendale Lloyd, had been present at the dinner.

THE DEMONSTRATIONS.

WILLIAM HARVEY AND THE CIRCULATION OF THE BLOOD.

A REPRODUCTION OF HARVEY'S ORIGINAL EXPERIMENTS DISPLAYED BY CINEMATOGRAPH.[1]

By Dr. H. H. DALE and Sir THOMAS LEWIS.

AMONG the items suggested for the tercentenary celebration of the publication of the "Exercitatio anatomica de motu cordis" was the reproduction, in the form of a series of demonstrations, of the dissections and experiments made by William Harvey himself, which formed his experimental proof of the circulation of the blood. We were invited by the Royal College of Physicians of London to organise such a group of demonstrations, if we regarded it as practicable.

On considering the proposal in detail, we came to the conclusion that it would be difficult to ensure the complete success of the scheme in this form. All Harvey's experiments, indeed, are simple, and easy to reproduce; but some of the most important are such as, for one reason or another, do not lend themselves readily to a direct demonstration of the kind proposed.

In some cases the phenomenon to be observed is one which few can see at one time, and which cannot, on the other hand, be produced several times on the same preparation. In others it is one which can be reproduced with ease and frequency in the laboratory, but not with the certainty at a particular moment which a public demonstration demands. In every case, again, the fact observed is now so familiar that its demonstration would have little interest by itself. The whole interest lies in its historical significance, as a fact newly observed by Harvey, and as a step in the argument by which Harvey progressed from the knowledge of his time to the discovery which laid anew the foundations of physiology on an experimental basis.

For all these reasons we formed the opinion that the object in view could best be attained by making cinematographic records of the things which Harvey saw and of the experiments which he made, and by arranging these in logical sequence, in relation to his argument. To this suggestion the Royal College of Physicians gave their approval and their practical support.

In making the film we have acted throughout in consultation, but one of us (T. L.) has had the main responsibility for its general scheme and arrangement, while we have shared the performance of the experiments. We have endeavoured to limit the demonstration to preparations which Harvey probably made, and to experiments the performance of which he describes or implies in his writings.

It has been necessary, of course, to adapt Harvey's methods of performing the experiments and displaying their results, so as to make them suitable for photographic record. Modern knowledge has also enabled us to use exclusively animals deprived of all sensation, either by destruction of the brain or by heavy dosage with an anæsthetic. Apart from these differences, we have employed only the simple means available to Harvey, and have endeavoured to carry out the experiments as Harvey himself performed them, and to record the results as he saw them.

[1] The Demonstrations arranged by the Royal College of Physicians in the Physiological Department of University College, London, were given on the mornings of Tuesday and Wednesday, May 15th and 16th.

Description of the Film.

The film opens with Cornelius Jansen's portrait of Harvey, which hangs in the Royal College of Physicians, London. The famous physician is seated. The hands of the picture are now seen on an enlarged scale and are represented as moving to take up an ancient treatise. We look over his shoulder to see a few pages of Galen's "De Venarum et Arteriorum Sectione," and his "De Usu Partium," of the "De Fabrica" of Vesalius, and the "Questiones Peripateticæ" of Caesalpinus, these being among the relevant works to which Harvey had access. Galen's doctrines, the dominant views in Harvey's time, are summed up briefly by means of a diagram. They are the doctrines that formed Harvey's starting-point. In part he substantiated Galen's views, in large part he refuted them as a result of the experiments which the film exemplifies, presenting them in the five following sections, each marked by an appropriate heading and diagram.

1. *Auricular Ejection.*—The first demonstration gives the evidence presented against the view that the ventricle fills by suction. It is the evidence of the normal sequence of chamber contraction and of the pumping of blood from auricle to ventricle.

2. *Ventricular Ejection.*—Here briefly are the main heads of evidence that the arteries are passive, that they are filled by the forcible ejection of blood from the ventricle into them. When the ventricle contracts it pales, becomes small and hard, the arteries expand and from the cut arteries blood gushes forth.

A brief summary of previous views relating to the pulmonary circulation is interposed, and the film proceeds to Harvey's third series of demonstrations.

3. *Passage through the Lungs.*—Pores in the interventricular septum cannot be demonstrated. The blood leaves the right heart by the pulmonary artery; it cannot return past the pulmonary valves. The presence of a way through the lungs to the left heart is demonstrated by injections.

In three steps Harvey has now shown that blood passes from the veins to the arteries, following a pulmonary course in so doing. He now passes on to his most crucial observations and original conclusions, illustrated in sections (4) and (5); it is at this stage that he first expresses the view of continuous motion and of movement in a circle; here his views diverge most notably from those of his predecessors.

4. *Continuous Movement from Veins to Arteries.*—In stating this evidence, he lays stress upon the quantity of blood which he calculates must be ejected from the left ventricle at each systole; this blood does not return. He calculates from simple data that the heart must within a short space of time eject more blood than is to be found in the whole body. Continuous motion can be displayed by obstructing the main veins or main artery, for the vessel empties beyond the obstruction and the blood accumulates behind it in each case.

5. The *Passages from Arteries to Veins* forms the final demonstration. The movements of blood in the human limb are studied; by obstructing now the artery and now the veins, the former is shown to fill from the centre, the latter from the periphery. Similar conclusions are formed by noting the effects of cutting through veins and arteries of living animals in their length; the former bleed peripherally, the latter centrally. Finally, the function of the venous valves, their control of the direction of the venous blood stream, is fully displayed in the human limb.

His experiments complete, Harvey writes his book. The last part of the film represents him turning the pages of this work; his hands close the book and lay it on one side, before becoming still.

THE HEART-LUNG PREPARATION.

RECENT ADDITIONS TO OUR KNOWLEDGE OF THE CIRCULATION.

By Prof. E. B. VERNEY.

THE introduction of the experimental method to the solution of biological problems has made possible, and marks the beginning of, a series of investigations and discoveries to which the degree of control which we now possess over both physiological and pathological states in man, is directly and solely attributable.

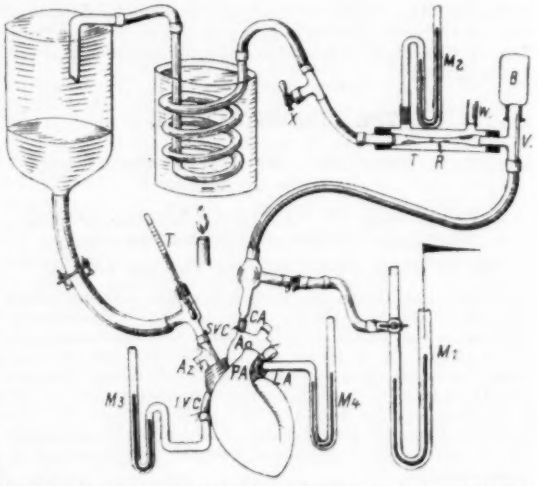
During the last 300 years physiological problems of fundamental moment have appeared and have been solved in rapid succession, the simultaneous extension of the mathematical and physical sciences on the one hand supplying effective weapons for their investigation, and on the other aiding in the rational interpretation of the results obtained. In the history of the physiology of the circulation, just as in that of any other branch of scientific knowledge, the discovery of a relationship of cause and effect between two phenomena has initiated attempts at formulating this relationship in a quantitative manner. And the success of such attempts is directly proportional to the degree to which uncontrolled and disturbing factors can be excluded from the investigation. The necessity for such an exclusion has prompted, therefore, in recent years the expenditure of a large amount of thought and practical ingenuity in the task of reducing a physiological problem to its simplest possible terms, in the hope that the accurate sketch so made of the fundamental processes at work may later be amplified so as to take its true share and position in the complete picture of the physiology of man.

Recent advances in the study of the circulation illustrate this tendency in contemporary thought and work. Sympathetic stimulation quickens the heart-rate, vagal stimulation slows it. Is the increased frequency in fever due to the effect of temperature directly on the pacemaker, or indirectly through the intervention of the cardiac nerves? During exercise the pulse accelerates, the stroke output and minute output of the heart increase. Is the acceleration a necessary accompaniment of an increased energy expenditure by the heart muscle, or are the two phenomena mutually independent? It is clear that, in order that questions such as these may be answered with a reasonable hope of truth, and especially if it is desired to probe more deeply into the mechanism by which the mammalian heart reacts to changes in the work which it is called upon to perform, a preparation must be available in which the heart is freed from all nervous control, and in which the supply of blood to the right auricle and the pressure against which the left ventricle ejects its contents, are under direct experimental control.

Such a preparation came into being chiefly through the ingenuity of the late Prof. E. H. Starling, and the researches which he and his pupils undertook with it have thrown a flood of light on the mechanism by which this organ reacts to changes in its environment.

The preparation was shown at the Harvey Tercentenary Celebrations by the Royal College of Physicians of London, and Starling's "Law of the Heart" demonstrated. The arrangement of the preparation is shown in the figure here given.

Blood passes from the venous reservoir on the left of the figure to a cannula provided with a thermometer and tied into the superior vena cava (SVC), thence to the right auricle, right ventricle, pulmonary artery, lungs, left auricle, left ventricle and aorta (Ao), through a second cannula tied into the brachiocephalic artery (CA), to the peripheral resistance TR. This is composed of a thin rubber tube R enclosed by a glass tube T, the air in the space between the rubber and the glass being subjected to any required pressure (measured by the manometer M2) by means of a hand bellows attached to the tubulure W. Thus the left ventricle is compelled, in order to eject its charge, to overcome this resistance which may be maintained constant or varied at will. From the peripheral resistance the blood flows through a warming coil to the venous reservoir to repeat the circuit already described. All the vessels conducting blood to and from the heart are ligatured with the exception of the superior vena cava and the



(Reprint from a paper by S. W. Patterson and E. H. Starling in the *Journal of Physiology*, 1914, xlviii., 357.)

brachiocephalic artery, both of which are provided with cannulæ as already described. Manometers M3, M4, may be connected to cannulæ tied into the inferior vena cava and left auricle respectively, and the pressures therein registered. A third manometer, M7, is connected to a side limb of the brachiocephalic cannula and records the arterial blood pressure. The lungs are not shown in the figure. A cardiometer is placed over the ventricles, and changes in their volume registered by connecting it to a piston recorder. In such a preparation, then, the inflow to the heart—alterable at will by adjusting the screw clip on the venous reservoir tube—the temperature and composition of the circulating blood, and the degree of peripheral resistance are under rigid experimental control, and the systemic output of the heart may readily be measured by taking the time of outflow of a given volume of blood from the T-tube X.

Changes in the rate of venous inflow or in the peripheral resistance are found to be without effect on the rate of the heart, this being determined solely by the temperature of the blood-supply. Furthermore, changes in rate occasioned by alterations in the temperature of the blood do not influence the minute output of the heart, this being determined solely by the venous inflow. Any increase in the work which the heart is called upon to do is accompanied by an augmentation in its diastolic volume, be this increased work occasioned by a rise in the peripheral resistance or by an increase in the venous inflow. The heart, therefore, dilates in order to do more work, the energy liberated by each contraction being determined by the initial length of the muscle-fibre, just as is the case in skeletal muscle. This relationship between the length of the heart-fibre and its power of contraction was called by Starling "the law of the heart."

More recent experiments by Starling and his pupils have shown that there is a direct linear relationship between the diastolic volume of the heart and its oxygen consumption. During the course of an experiment with the heart-lung preparation,

it is found that with a constant output of mechanical work the heart gradually dilates—loses its "tone"—the dilatation being accompanied by a corresponding increase in the oxygen consumption. It has become possible, therefore, to define the tone of the heart muscle in terms of its mechanical efficiency, that is to say, in terms of the ratio between the external work performed and the total energy liberated over a given period of time.

Contributions to medicine of such fundamental importance as these could only have been made on the heart freed from the multitude of influences, nervous and chemical, which serve to complete the picture of its power and means of adaptation to changes in the work which it is called upon to perform. And now by the experimental superposition of these "influences" upon the initially isolated heart, one is becoming able to visualise with much more precision than has hitherto been possible, their relative importance and actual share in such a complex cardiovascular picture as is presented for example in muscular exercise or in heart failure in man.

The demonstration of the heart-lung preparation emphasised one method of approach to physiological problems connected with the circulation, a method of approach which has been amply justified in its conception by the results of far-reaching significance which have already been obtained through its prosecution.

Luncheon to Delegates and Guests in the Great Hall of St. Bartholomew's Hospital.

On Tuesday, May 15th, a luncheon was given by the Treasurer, Almoners, and the Medical Staff of St. Bartholomew's Hospital to the delegates and guests to commemorate William Harvey, physician to the hospital, 1609–1630. The attendance was large, the chair being taken by Lord Stanmore, treasurer of the hospital. After the Chairman had welcomed the delegates and guests, Sir Wilmot Herringham, consulting physician to the hospital, gave an address on Harvey's connexion with the hospital. He described Harvey's work with the hospital, pointing out that he drew up rules for the regulation of the patients. Among these were that no one should be admitted for trivial or incurable diseases, and that those suffering from venereal disease should be isolated. Also, that no patient should stay in the hospital beyond a certain time, and those who refused to obey the rules or to take their medicine should be summarily discharged. He further ordained strict rules for the staff, the chief of which was that the surgeons should be strictly under the thumb of the physicians. Sir Wilmot pointed out that Harvey was almost as much of a surgeon as a physician, and it was because the physicians of that time were the better educated members of the profession that they dominated the surgeons, this being the *raison d'être* of Harvey's discriminating injunction. The speaker drew attention to the fact that Harvey was a cultured man. As witness of this he was sent by King Charles I. to choose pictures for him on the Continent. Harvey lost his post in the hospital on account of his allegiance to, and friendship with, the King. Harvey was a staunch family man and a man generous both in public and private life. He was a friend of the learned men of the day, the Earl of Arundel, John Selden the great jurist, Hobbes the philosopher, and Bacon. It was Harvey who said of Bacon that he taught philosophy like a Lord Chancellor. Sir Wilmot summed up the characteristics of Harvey when he said that he was a scientific man in the modern sense of the word, and his name is linked with a discovery greater than any made by Hunter, though Hunter, coming later, possessed deeper knowledge in particular directions. Hunter may be termed the father of pathology and Harvey the father of physiology.

Sir John Rose Bradford returned thanks to the Governors of the Hospital for their hospitality and paid tribute to Sir Wilmot Herringham for his wise, humorous, and eloquent address on Harvey, declaring that of all the speeches in memory of Harvey none would live longer.[1]

Lord Stanmore replied on behalf of the hospital.

Conversazione in the City.

On the evening of Tuesday the Prince of Wales attended a reception held by the Royal College of Physicians at the Hall of the Merchant Taylors in Threadneedle-street. The President and Lady Bradford received a large gathering of delegates, Fellows of the College, and their guests, and the evening was spent in conversation, to the strains of the band of the Welsh Guards.

List of Delegates.

Representation of Foreign Countries.

Argentine.—University of Buenos Ayres: His Excellency Dr. José Evaristo Uriburu.

Austria.—Academy of Sciences, Vienna: Prof. K. F. Wenckebach.

Belgium.—Royal Academy of Medicine, Brussels: Prof. P. Nolf. University of Louvain: Prof. Bouckaert.

Czecho-Slovakia.—University of Prague: Prof. Frantisek Mares and Dr. Syllaba.

Denmark.—University of Copenhagen: Prof. Oluf Thomsen.

Egypt.—University of Egypt, Cairo: Dr. A. A. Ismail.

Finland.—University of Helsingfors: His Excellency M. A. H. Saastamoinen.

France.—University of Paris: Prof. Pierre Teissier. Academy of Medicine, Paris: Prof. A. Chauffard. Pasteur Institute, Paris: Prof. Delezenne.

Germany.—University of Berlin: Prof. F. Keibel. University of Frankfort: Prof. A. Bethe. University of Leipzig: Prof. M. Gildemeister. Prussian Academy of Sciences: Prof. Max Rubner.

Greece.—University of Athens: His Excellency Demetrios Caclamanos.

Holland.—University of Leyden: Prof. J. A. J. Barge. Royal Academy of Sciences, Amsterdam: Prof. J. van der Hoeve.

Hungary.—University of Budapest: Prof. Lajos Nékám.

Italy.—University of Bologna: Prof. M. L. Patrizi. University of Padua: Prof. A. Castiglioni. Academy of Medicine, Rome: Dr. Aldo Castellani, K.C.M.G.

Japan.—Universities of Japan: Mr. W. Moriya, Secretary to the Japanese Embassy.

Norway.—University of Oslo: Prof. G. H. Monrad-Krohn.

Poland.—University of Warsaw: Prof. G. Modrakowski.

Roumania.—University of Bucharest: Prof. D. Ionescu and Dr. S. Lalu.

Russia.—University of Kazan: Prof. A. Samoylov. Academy of Sciences, Leningrad: Prof. I. P. Pavlov.

Sweden.—University of Upsala: Prof. Gustav Göthlin. Royal Swedish Academy of Sciences, Stockholm: Prof. J. E. Johansson.

Switzerland.—University of Berne: Prof. Leon Asher. University of Geneva: Prof. Maurice Roch.

United States of America.—Harvard University: Prof. Stanley Cobb. Johns Hopkins University: Prof. F. J. Goodnow and Prof. W. H. Welch. University of Pennsylvania: Prof. W. H. F. Addison. College of Physicians, Phil.: Dr. F. R. Packard. Rockefeller Institute: Dr. Rufus Cole.

British Representatives: Dominions Beyond the Seas.

Australia.—University of Sydney: Dr. C. B. Blackburn.

Canada.—University of Toronto: Dr. R. D. Rudolf.

India.—University of Calcutta: Sir Leonard Rogers.

Malta.—University of Malta: Dr. Edgar H. Ferro.

New Zealand.—University of Otago: Dr. Daniel Colquhoun.

Tasmania.—University of Tasmania: Dr. John Bruce Hamilton.

British Isles.

England and Wales.—Royal College of Surgeons: Sir Berkeley Moynihan, President. Society of Apothecaries: Dr. R. Whiteside Statham, Master. University of Oxford: Sir Farquhar Buzzard, Regius Professor of Medicine, and Sir Archibald Garrod. University of Cambridge: Sir Humphry Rolleston, Regius Professor of Physic. University of London: Lord Dawson of Penn. University of Durham: Sir Thomas Oliver. University of Manchester:

[1] The address will appear in full in the next issue of the St. Bartholomew's Hospital Gazette.

Prof. F. Craven Moore. University of Birmingham: Sir John Robertson. University of Liverpool: Prof. John Hay. University of Leeds: Dr. J. B. Baillie, Vice-Chancellor. University of Sheffield: Prof. A. J. Hall. University of Bristol: Prof. Edward Fawcett. University of Wales: Prof. T. Graham Brown. Royal Society: Sir Ernest Rutherford, President. Medical Society: Mr. H. W. Carson, President. Zoological Society: Duke of Bedford, President. Royal Society of Medicine: Sir James Berry, President. Harveian Society: Dr. Herbert French, President. The Lister Institute: Major-Gen. Sir David Bruce. Physiological Society: Prof. Joseph Barcroft. Anatomical Society: Dr. E. Barclay-Smith. Pathological Society: Prof. H. R. Dean. Ministry of Health: Sir George Newman. Medical Research Council: Sir Thomas Lewis. Naval Medical Service: Surgeon Vice-Admiral A. Gaskell, Director-General. Army Medical Service: Sir Matthew Gregson Fell, Director-General. Royal Air Force Medical Service: Air Vice-Marshal D. Munro, Director. Indian Medical Service: Lieut.-Colonel J. K. S. Fleming. British Association: Sir Charles Sherrington. British Medical Association: Sir Robert Philip, President. London School of Hygiene and Tropical Medicine: Dr. Andrew Balfour.

Scotland.—University of St. Andrews: Prof. Adam Patrick. University of Aberdeen: Prof. J. A. MacWilliam. University of Glasgow: Prof. T. K. Monro. University of Edinburgh: Sir E. Sharpey-Schafer. Royal Society of Edinburgh: Mr. A. Logan Turner. Royal College of Physicians: Dr. Robert A. Fleming, President. Royal College of Surgeons: Mr. Alexander Miles, President. Royal Faculty of Physicians and Surgeons, Glasgow: Dr. G. H. Edington, President.

Ireland.—University of Dublin (Trinity College): Prof. A. F. Dixon. University of Belfast: Prof. J. A. Lindsay. Royal College of Physicians: Dr. W. A. Winter, President. Royal College of Surgeons: Mr. A. Fullerton, President.

Corporation of Folkestone (Harvey's Birthplace): Mr. Reginald Gilbert Wood, the Mayor. King's School, Canterbury (Harvey's School): Mr. Algernon Latter, late Headmaster. St. Bartholomew's Hospital (Harvey's Hospital): Lord Stanmore, Treasurer. Caius College, Cambridge (Harvey's College): Sir Hugh Anderson, Master. Merton College, Oxford (where Harvey was Warden): Mr. T. Bowman, Warden. Representative of the Harvey Family: The Rev. Rossendale Lloyd.

CHARTERS FOR HOSPITALS.—The London Homœopathic Hospital and the Royal Victoria Hospital, Dundee, have petitioned the Privy Council for the grant of Charters of Incorporation.

NATIONAL PHYSICAL LABORATORY.—A reception will be held at this laboratory at Teddington on June 26th, at 3 P.M., when the work of the laboratory will be open to inspection. Medical guests will be specially interested in the department of radiology. According to the report for 1927 (H.M. Stationery Office. 7*s.* 6*d.*), this department has devoted much time to the problems of X ray protection, particularly in connexion with the revision of the recommendations of the X Ray and Radium Protection Committee. Dr. C. W. C. Kaye, the superintendent of the department, states that the laboratory has dealt with many inquiries for information on this subject from institutions and private individuals, both at home and abroad. Routine tests of X ray protective materials have fallen in number during the year, but the work of inspecting completed X ray installations has increased considerably. The measurement of X ray intensity has received further consideration and the work of foreign investigators in this field has been studied. As a result, it is proposed to undertake experimental work, using a Bencken ionisation chamber in which the ionisation is produced in a gas at high pressure. Work of this kind, it is hoped, will lead to the standardisation of X ray intensity meters. The absolute absorption of X rays of a variety of specific wave-lengths has been measured in several different pure metals. It was the work of Prof. A. E. Owen, sometime secretary of the Rontgen Society, that revealed the important relationship between the wave-length of X rays and their absorption in matter. The accuracy aimed at in the present investigations shows that radiology is well on the way to becoming an exact science, where accurate measurement will be possible. The increasing importance of general radiology has led during the year under review to the formation of a department to investigate the application of the methods of X ray crystal analysis to industrial problems. It would be convenient if the reports of superintendents of different departments of the National Physical Laboratory could be issued in separate parts, since its scope is now extremely wide.

Special Articles.

MEDICINE AND THE LAW.

Removal of Name from Dentists Register.

THE King's Bench Division on May 10th decided an important point under the Dentists Act in the case of Pickup *v.* Dental Board of the United Kingdom. Section 13 of the 1878 Act provides that a person registered in the Dentists Register who has been convicted of a felony or misdemeanour (or has been guilty of infamous or disgraceful conduct in a professional respect) shall be liable to have his name erased from the Register. The question arose as to the meaning of "misdemeanour." Does it mean a misdemeanour triable on indictment or has it the wider meaning of any offence which is less than a felony whether triable on indictment or summarily? The Lord Chief Justice held that "misdemeanour" in Section 13 has the wider meaning. He quoted the judgment of Lord Alverstone in Du Cros *v.* Lambourne (1907, 1 K.B., 40) where the then Lord Chief Justice cited with approval the following passage from a well-known text-book: "This word, in its usual acceptation, is applied to all those crimes and offences for which the law has not provided a particular name. . . . A misdemeanour is, in truth, any crime less than felony." Lord Hewart was strengthened in this view because Section 13 of the Dentists Act contains a proviso which inter alia directs that a dentist is not to have his name erased because of a conviction for "an offence which, though within the provisions of this section, does not, either from the trivial nature of the offence or from the circumstances in which it was committed, disqualify a person from practising dentistry." This proviso seems to contemplate that the offences might be of a trivial nature and that, because of their trivial nature, the person convicted might be allowed to retain his name on the Register. Mr. Justice Avory (who, when at the bar, argued for the opposite meaning of "misdemeanour" in Du Cros *v.* Lambourne) and Mr. Justice Shearman concurred. The result was that the court dismissed Mr. James Pickup's appeal from the order of the General Medical Council that his name be erased from the Register on the ground that he had been convicted of misdemeanour. The point is significant for medical as well as dental practitioners since the same phrase as to conviction for felony or misdemeanour occurs in Section 29 of the Medical Act of 1858, though the proviso as to trivial offences is not there expressed in the statute, but is tacitly left to the good sense of the General Medical Council. An obvious instance of a trivial offence involving no professional disqualification would be a conviction for exceeding the speed limit or some other similar charge inevitable in the case of those whose work obliges them to use a motor-car.

Alleged Delay in Notifying Tuberculosis.

At a meeting of the Carlisle Health Committee at the end of April complaint was made by the medical officer of health of the delay in notifying cases of tuberculosis. Some members of the Committee were inclined to urge prosecution, but their deputy clerk pointed out that there might be a legal difficulty in proving the date at which the practitioner became aware of the patient's infection. It appeared that a circular letter had been sent round to the medical profession a few months before, and the Committee decided to send out another warning. Dr. J. Beard, the medical officer, had stated that there was still a large number of cases in which notification was not received until just before the death of the patient. The complaint was, it seems, of delayed notification rather than of failure to notify. If the delay is due (as was suggested) to a desire to respect the feelings of the patient's family, it is for consideration whether safeguards cannot be provided to reassure the public by preventing publicity.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

University Physical Welfare Fund.

THE new draft Ordinance of the University Courts of the four Scottish Universities is a document of importance. It has been resolved: (1) that it is expedient to make further provision for the maintenance and improvement of the physical welfare of the students attending the universities; and (2) that an addition of 10*s.* 6*d.* should be made to the present matriculation and entrance fees to be applied towards meeting the cost of such provision. Dr. Alexander Morgan, late Director of Studies under the Provincial and National Committees for the Training of Teachers, said at the Edinburgh University Council that to those familiar with the difficulties and hardships of Scottish student life this ordinance would be welcome. It opened out great possibilities of beneficent activities and it would increase the confidence of parents and public authorities in the development of the university education.

The Budget and the Reform of Local Authorities.

The scheme sketched by the Chancellor of the Exchequer means a radical reform of all the local health and medical authorities. The whole financial and administrative systems will be integrated in a way impossible until now. Already the Scottish burghs have begun the active discussion of the proposals as they affect burghal administration. For a generation there has been a growing desire to widen the basis of local administration, and this cannot be effectively done without a reform of rating systems. Whatever modification of detail may be required in adjusting poor-law, public health, insurance, and other medical services, the broad result will secure to Scotland greater efficiency in every leading service. The experiment carried out by the Education Act of 1918 proves that the larger education authority is able to do work that was impossible under the smaller school boards, and the same will doubtless be true of medical services under the reorganisation.

Cream Preservative Once More.

Major Walter Elliot, Under Secretary of State for Scotland, in a letter to Brigadier-General Charteris, M.P., explains that the Board of Health is in agreement with the decision of the Departmental Committee that there shall be no preservative allowed for "double cream." The Secretary of State, therefore, as President of the Board, withholds assent to the suggested delay of "five or six years." Meanwhile, experiments are going on at Cumnock Creamery with a pasteurising plant adapted to the pasteurisation of cream. The claims for this plant are high; but given the proper selection of milk and reasonable care with the process, the results are apparently satisfactory. Further experiments will no doubt be made.

PARIS.

(FROM OUR OWN CORRESPONDENTS.)

Inoculation against Diphtheria.

THE winter's epidemic of diphtheria in Paris has clearly shown the value of Ramon's anatoxin. This is obtained by heating diphtheria toxin and adding to it 40 per cent. commercial formalin in the proportion of 1 in 2000. Treated in this way the toxin becomes atoxic, whilst keeping its antigenic properties. Anatoxin is obtainable in boxes of three ampoules, each containing 2·0 c.cm., the liquid being tinted green. Either two or three injections are given, the first being 0·5 c.cm., and the second 1·0 c.cm., given a fortnight after the first. In 87 per cent. of cases the Schick reaction becomes negative after the second, which makes a third injection unnecessary; if required it is given after an interval of a week. In case of urgency it may be desirable to produce a passive immunity with purified serum.

Zoeller and Ramon now recommend vaccination via the nasal mucous membrane for patients who object to subcutaneous inoculation. Against diphtheria they protect the patient by instilling concentrated glycerinated antitoxin into the nose every second day. Two and sometimes three courses of treatment, lasting six days, with intervals of a week to a fortnight between them, have proved sufficient to convert a positive into a negative Schick reaction. The method has the advantage of being easy to apply and of not provoking any vaccinal reaction, but it is less precise than subcutaneous inoculation, and fairly large doses of antigen are required. Local vaccination is said to be as successful in preventing dysentery, tetanus, and scarlet fever, as it is in the prophylaxis of diphtheria.

Intermittent Albuminuria Traced to Ingestion of Milk.

Widal and his school have shown that milk can produce colloidoclasic crises in persons who have hepatic insufficiency, but as far as we know it has never been noticed that ingestion of milk may be followed by the appearance of albumin in the urine. This is the original feature of a case reported recently by Barbier. The patient had albuminuria every morning and evening, because at breakfast and dinner he drank a glass of milk. When this habit was discontinued the albumin disappeared. It would be interesting to know whether anyone else has observed a similar phenomenon.

Treatment of Human Trypanosomiasis.

Tryparsamide is generally used in the treatment of trypanosomiasis, but at the Pasteur Institute a new remedy has been produced under the name of "270 Fourneau." This product has been tried in the French Congo, and the results already show that its effects are entirely comparable with those of tryparsamide. The best indication of cure is the return of the cerebro-spinal fluid to normal, and this occurred at the end of the first course of injections, provided that at least 0·25 g. per kg. of body-weight had been injected. Administered in one long course, "270 Fourneau" seems to give results as satisfactory as, if not better than, tryparsamide. It is injected subcutaneously.

Biological Reactions in Tuberculosis.

The diagnosis of latent tuberculosis is exceedingly difficult, and in order to be certain, it is necessary to make use of biological reactions. In children a cuti-reaction fulfils all needs, but in adults one must have recourse to the reaction of fixation. The cuti-reaction is positive in persons who have harboured tubercle bacilli for even a brief period, and is thus positive in 80 to 97 per cent. of adults, which makes it almost valueless in practice. The reaction of fixation, however, is only positive in 10 to 15 per cent., and according to Prof. Rieux it answers the question of infection without ambiguity.

Raymond-Hamet has presented to the Académie des Sciences a report of his studies on the plant uzara, which contains an active glucoside uzarin. This is more soluble than digitalin, less toxic than ouabain, and should take equal rank with these two glucosides as a myocardial tonic and stimulant.

Three surgical courses will be given this year at the surgical clinic of the Salpêtrière, Paris, under the direction of Gosset and Loewy. Each course is of one week, and they will begin on May 14th, June 25th, and Dec. 17th. Practical operations will be performed by those attending, and the number of students is limited to ten. Particulars may be had from the Secrétariat Faculté de Médecine, 12, rue de l'Ecole de Médecine, Paris. An announcement in English of these courses appears in the *Presse Médicale* of April 25th.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

Copper Salts in Anæmia.

DISCOVERIES which may have great medical significance were announced at the recent meeting of the Federation of American Societies for Experimental Biology. Dr. E. B. Hart and his colleagues in the department of agricultural chemistry of the University of Wisconsin noticed that while their rats could be cured of anæmia by the ash of liver or lettuce, they could not be cured by any kind of inorganic iron salts. They observed also in the successful ash a bluish tinge suggestive of copper salts. Recollecting the copper content of the respiratory pigment (hæmocyanin) of certain crustacea they proceeded to test a diet in which ferric chloride was supplemented by copper sulphate. Striking cures resulted. It is suggested that copper may be necessary as a catalyser in the formation of hæmoglobin. At any rate copper is now to be used experimentally by certain of the larger hospitals in the diet of patients suffering from anæmia.

That Congo red is a "non-specific antitoxin" is claimed by Prof. P. J. Hanzlik and Prof. E. M. Butt, of Leland Stanford University. The property is said to be shared by other colloidal dyes, but Congo red seems to have been the most effective in preserving guinea-pigs, rabbits and pigeons from lethal doses of botulinus and diphtheria toxins.

Research Defence.

The new quarterly journal for laymen, entitled *Medical Progress*, is published by the American Association for Medical Progress, which corresponds very closely with the British Research Defence Society. The articles in the first number, all commendably serious and thorough, include one by Dr. Gladys H. Dick on the Control of Scarlet Fever, and a signed article by Dr. Benjamin C. Gruenberg, who is managing director of the Association, as well as Editor of its journal. The Journal will make its appeal to a more intelligent and educated public than that for which *Hygeia* has catered so successfully, but it will have to give more matter before it will gain a large circulation at 25 cents per number. The Association itself has already done a great deal of useful work. It was founded in the belief that the danger of anti-scientific sentiment in the United States, particularly as it affects public health and care of the sick, lies not merely in widespread ignorance regarding scientific discoveries or methods, but in various efforts to discredit the scientific method in medical research and in public health procedure. This hostility exploits the ignorance of the masses and panders to their prejudices. The result is that medical standards are lowered. During the last year the Association has investigated the three groups of cases in which serious reactions followed the administration of diphtheria toxin-antitoxin. Another praiseworthy action of the Association has been an effort to locate and, when necessary, to care for the survivors of those volunteers who risked their lives under Major Walter Reed and his associates in the critical experiments which revealed the ætiology of yellow fever. This work has been done in connexion with the Copeland-Wainwright Bill, which seeks to make Congress responsible for such care in the future. The Association has its headquarters among the member societies of the National Health Council at 370, Seventh-avenue, New York City.

Schistosome Dermatitis.

Last summer, when Prof. Cort of the Johns Hopkins School of Hygiene was collecting snails at the University of Michigan Biological Station on Lake Douglas, he made a painful but quite interesting discovery. He had a number of catches which he brought home in a bucket containing about ten inches of water, and subsequently he removed the snails two or three at a time from this bucket in order to assign them each to its proper species. In this leisurely process his left hand was brought into frequent contact with the water; "after about ten minutes a severe prickling sensation, resembling the bites of small insects, was felt on the back and sides of the wrist." In spite of the immediate application of soap and alcohol a pruriginous papular dermatitis developed. The papules became pustular after 48 hours, and the discomfort was considerable, and lasted altogether for five days. Similar cases of dermatitis had been noted throughout the district for a number of years, but Dr. Cort apparently was the first helminthologist to be attacked. The offending cercariæ were duly isolated, and made to repeat their performance on Dr. Cort and others. It is interesting that two human volunteers proved uninteresting to the same cercariæ that invaded Dr. Cort and others of his friends avidly enough. An account of Dr. Cort's experiments appears in the *Journal of the American Medical Association* for March 31st.

The New Coolidge Tube.

Dr. W. D. Coolidge announces the successful completion of an X ray tube which operates at 900,000 volts and discharges a stream of electrons with a velocity of 175,000 miles per second. Finding himself unable to build a single tube for more than 300,000 volts, owing to the "cold cathode" effect, Dr. Coolidge designed a cascade arrangement by which the rays are speeded up from one tube to another. The present achievement does not mark the limit of possible attainment by any means. "We expect," says the inventor, "to find that a high-voltage positive ray tube can be constructed along the general lines of the multi-sectional cathode ray tube. In this case, we should need, according to Rutherford, about eight million volts to produce positive rays having the energy of the highest velocity alpha rays from radium." It is too early to forecast the therapeutic possibilities of the new invention, but radiologists will have no difficulty in believing that they are likely soon to have a new and powerful instrument at their disposal.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 5TH, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 321 (last week 376); scarlet fever, 1591; diphtheria, 1097; enteric fever, 63; pneumonia, 1323; puerperal fever, 49; puerperal pyrexia, 108; cerebro-spinal fever, 12; acute poliomyelitis, 9; acute polioencephalitis, 1; encephalitis lethargica, 29; dysentery, 16; ophthalmia neonatorum, 111. No case of cholera, plague, or typhus fever was notified during the week.

Cases of small-pox were notified from the following 25 counties: London, 27 (distributed over four metropolitan boroughs, Wandsworth 10, Lambeth and Poplar 8 each, Stepney 1); Bedford, 8; Berks, 1; Chester, 1; Derby, 7; Durham, 58; Essex, 2; Gloucester, 5; Lancaster, 20; Leicester, 1; Lincoln, parts of Holland, 8; parts of Lindsey, 4; Norfolk, 1; Northumberland, 9; Nottingham, 10; Soke of Peterborough, 1; Southampton, 1; Stafford, 13; Surrey, 2, Sussex West, 1; Warwick, 2; Yorks, North Riding, 8; West Riding, 88; Glamorgan, 20; Monmouth, 23.

The number of patients in the Infectious Hospitals of the Metropolitan Asylums Board on May 8th–9th was as follows: Small-pox, 29 under treatment, 3 under observation; scarlet fever, 1550; diphtheria, 2183; enteric fever, 34; measles, 1281; whooping-cough, 131; puerperal fever, 24 (plus 18 babies); encephalitis lethargica, 68; "other diseases," 19. At St. Margaret's Hospital there were 14 cases of marasmus and 15 babies (plus 11 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was one death from small-pox, 7 (1) from enteric fever, 89 (52) from measles, 9 (3) from scarlet fever, 51 (9) from whooping-cough, 33 (12) from diphtheria, 44 (9) from diarrhœa and enteritis

under two years, and 73 (19) from influenza. The figures in parentheses are those for London itself.

The death provisionally classified to small-pox was assigned to Bradford. It was, we understand from Dr. J. J. Buchan, that of a man, 51 years of age, vaccinated in infancy, who was admitted to the Small-pox Hospital from the Bradford Municipal General Hospital. The small-pox was of a mild character, the primary cause of death being pernicious anæmia. The fatal cases of enteric fever outside London occurred at Walsall (2), Bath, Manchester, Hull, Middlesbrough, each one. Of the 37 fatal cases of measles outside London 4 were returned from Sheffield and 3 each from West Ham, Liverpool, and Manchester; while the figures in Edinburgh, Glasgow, and Dublin for the same week were 9, 4, and 6. Of the 42 fatal cases of whooping-cough outside London 10 were reported from Liverpool and 8 from Birmingham.

The number of stillbirths registered during the week was 315 in the great towns, including 57 in London.

Correspondence.

"Audi alteram partem."

A SIMPLE HOOKWORM LARVICIDE.

To the Editor of THE LANCET.

SIR,—In an annotation under this heading in THE LANCET of April 21st there is quoted work by Dr. W. O. Fischer, Superintendent of Research in the Rand Mines Laboratory, on the effect of common salt in destroying hookworm larvæ. Fischer's paper itself contains no references, yet it is interesting to turn back 22 years and reconsider one which might well have been given, in the shape of work by Lambinet in the Liège coal-mines,[1] reported on by Kuborn at the Academy's session on April 28th, 1906. This report dealt with just the matters considered by Fischer and reached conclusions which seem to be those to which he too has come. Manouvriez, of Valenciennes, had stated that coal-mines with saline water were not infected with ankylostomes while those with fresh water were. Lambinet set himself to determine, by careful and controlled experiments, whether common salt could be used as a disinfectant in mines. He showed that in 2 per cent. salt solution sheathed hookworm larvæ survived a month, in 4 per cent. 10 to 20 days, in 10 per cent. they died in four or five days, in 15 per cent. a few survived for 24 hours, and in 30 per cent. death was rapid. Again, using parallel sets of cultures, but moistening one with salt solution and the other with water, Lambinet's results coincided with those of Hayo Bruns, of Berlin, in that 3 per cent. salt solution was the lowest concentration which prevented development to the infective stage. Finally no development occurred in a stool rich in eggs, but covered with salt, and to cover stools with this cheap material constituted Lambinet's suggestion for the eradication of hookworm infection from mines. Lambinet's work was not received with enthusiasm; it was altogether too simple for his audience, as good methods so often are. It at all events seems to map out with sufficient precision the ground which Fischer has explored 22 years later. The incident is illuminating, as being one of a number of recent instances which show that much which is now not known concerning hookworm infection by some of us who are working on the subject was definitely and accurately determined even more than 22 years ago. I am, Sir, yours faithfully,

Ealing, May 4th, 1928. CLAYTON LANE.

*** Colonel Clayton Lane's letter is a reminder that we possess no convenient résumé in a single cover of the immense mass of recent knowledge regarding hookworm disease in various parts of the world.—ED. L.

[1] Bull. Acad. Med. Belg., 1906, p. 345.

THE TREATMENT OF ULCERATIVE COLITIS.

To the Editor of THE LANCET.

SIR,—The report of the discussion on Ulcerative Colitis at the Harveian Society, and your leading article thereon of April 28th, give such a pessimistic view of the results of treatment in this disease that I feel called upon to add my protest to those of Dr. Hurst and Dr. Ryle, as in my opinion it is quite erroneous to believe that ulcerative colitis is anything like as incurable or fatal a disease as these reports purport to show. It has been my lot to see and treat a large number of such cases, and apart from those seen in private, there are never less than three or four cases at a time in St. Mark's Hospital. The total number of such cases of which I have recent records is 130 of various degrees of severity, with 13 deaths; this gives a mortality of 10 per cent.

My experience has been that about 40 per cent. of patients recover without operative interference. Suitable medication, dietary, and lavage of the colon, combined with serum injections and zinc ionisation, prove sufficient to restore the mucous membrane to a normal condition. The patient is examined periodically with the sigmoidoscope and treatment continued until no signs of ulceration can be seen. Although I have seen very good results from the injection of antidysenteric serum in a few cases, it has completely failed to have any influence on the disease in the majority. The other 60 per cent. of cases have been treated by appendicostomy, either because they were very bad cases to begin with or because non-operative treatment had been given a fair trial and failed. It follows that all the more serious cases have been operated upon.

Of the 130 cases treated: 51 were treated without operation; 79 were treated by appendicostomy.

Of the 51 cases: 27 were definitely cured; 23 were improved and ceased to attend, but cannot be claimed as cures, as they were not examined after they said they were well; 1 died.

Of the 79 cases treated by appendicostomy: 59 were definitely cured; 12 died; 8 improved.

The total mortality therefore was only 10 per cent.

The most troublesome feature of the disease is its marked tendency to recur, but it eventually dies out, and the vast majority of patients are completely restored to health.

One of the commonest errors in treatment is that so often the patient is put upon a diet with insufficient nourishment. Ulcerative colitis is a very exhausting disease, and if recovery is to take place the patient must be well fed. As in the case of tubercle, he requires an increased amount of intake to make up for the increased loss. As a rule, the diet is reduced rather than increased. My experience has been that a full diet should be given. The difference between the residue of a mutton cutlet and a glass of milk by the time it reaches the colon is negligible as regards any effect upon the ulcerated surface. I am constantly seeing cases of ulcerative colitis who, to all intents and purposes, are being carefully starved. It is just as absurd to suppose that a patient with this disease can recover on a starvation diet, as that a patient with phthisis could do so. The improvement that results from feeding such patients on full diet is spectacular. I can almost hear some of my medical colleagues saying, "How ridiculous! A patient with ulcerative colitis cannot digest ordinary food," but why not? Digestion does not take place in the colon, and in these days there are many aids to digestion.

About a year ago I had sent up to me from the country a poor curate who was supposed to be dying from ulcerative colitis. He had had an appendicostomy performed, but was getting no better. He had been ill for 18 months and weighed 5½ st. I had not seen him until he arrived on a stretcher in the nursing home. I found he was reduced to skin and bone, but the sigmoidoscope revealed a normal colon with no ulceration at all. I found he had been fed on small quantities of milk and

Benger's food and the total quantity would not have kept two ordinary sized cats in health. I put him on a full diet gradually, with pepsin and pancreatin to assist his digestion, and in six weeks he put on 3 st. in weight, an average of half a stone a week, and is now perfectly well.

I am, Sir, yours faithfully,

J. P. LOCKHART-MUMMERY, F.R.C.S.

London, W., May 9th, 1928.

HAS THE CAMPAIGN AGAINST VENEREAL DISEASE BEEN A FAILURE?

To the Editor of THE LANCET.

SIR,—In your issue of May 5th Dr. E. Graham Little discusses the merits of compulsory measures in dealing with venereal disease and refers to the legislation promoted recently by the Edinburgh Corporation. I have no desire to enter into a discussion on the merits of the Edinburgh Corporation Bill, but I think it advisable to correct the mis-statements in the latter part of Dr. Little's letter.

The meeting of the Edinburgh division of the British Medical Association, to which he refers, was not called by the promoters of the Bill. Whipping was not indulged in. The meeting was called by the secretary of the division in the usual way, and each member of the division was asked on the billet to bring with him to the meeting the statement by the corporation which had been issued to every medical practitioner in Edinburgh some weeks previously. The meeting was a large one for a divisional meeting, when one considers that the average attendance at such meetings is about 30, while some 60 members attended this meeting. The provisions of the Bill were freely and frankly discussed and every member present was in favour of some action being taken to deal with defaulters. The minority of 11 were in favour of the Bill in so far as the powers vested in the medical officer of health were restricted to information given by medical practitioners only. No motion was proposed, by any member present, against the Bill. In view of the findings of the meeting, the number of members present, and the fact that this is the body which represents the medical profession in the city, the promoters of the Bill were justified in claiming that representative medical opinion in Edinburgh was in favour of some measure of legislation to enable venereal diseases to be dealt with more effectively.

With regard to the opinion of the medical profession in other areas of Scotland, I understand that in Lanarkshire 95 per cent. of the medical men are in favour of a much more drastic measure which has beeen drafted by the V.D officer of the county. Each member of the profession has been circularised and signified in writing his support of a measure on similar lines to that which is being promoted by the Glasgow Corporation.—I am, Sir, yours faithfully,

DAVID LEES.

The Royal Infirmary, Edinburgh, May 8th, 1928.

To the Editor of THE LANCET.

SIR,—The correspondence evoked by my letter of April 21st shows that the subject is one of widespread interest. May I, therefore, comment on some of the points raised. It would seem that my main contentions are admitted. These briefly, are that gonorrhœa, particularly in women, is being inadequately handled, that the results are not to our credit, and that a great increase in in-patient accommodation is required if we are to get anything like even the moderately good results we have obtained in the treatment of syphilis.

It is heartening to find Dr. Burke championing the cause of the V.D. clinics run from premises specially equipped and staffed for the purpose. There is an official tendency to depreciate such clinics on the assumption that patients do not care to be seen attending them, but prefer to go to a department of a general hospital, thus hiding the reason for their visits. Undoubtedly there are such people. Equally there are just as many who think that the special clinic is better because it is special. Both classes should be considered. At the Lock Hospital we have as many as we can handle who come for their entire treatment. We find, however, that there are quite a considerable number who come once for a diagnosis, attend some clinic, less labelled or more convenient, for their treatment, and return to the Lock Hospital for their final tests for cure—thus making the best of both worlds. Clinics attached to the great general hospitals have many obvious advantages. They have one weakness, however, which is deplorable, and which should be remedied; they do not provide bed accommodation in just proportion to the grants given them since the antivenereal campaign of 1917 was started.

This present-day interest in venereal disease is not a new thing. History has a habit of repeating itself. It is a mistake to think that it is only since the Great War that venereal diseases have become so prevalent. During the mid-Victorian period these diseases were rampant throughout England. This is not surprising when one remembers that gleet was then considered non-contagious and syphilis was treated by a two-month course of mercury pills. A census taken by Acton at Paget's out-patient clinic at St. Bartholomew's showed that over 50 per cent. of his patients were venereal. At Guy's the proportion was 43 per cent., whilst at the Royal Free it was over 60 per cent. Dr. Burke will be interested to note that in Manchester and Salford, with a population of 390,000, there were about 3500 venereal cases treated in one year (1866). In those pre-Listerian days pressure on hospital beds was not as great as now, and the accommodation for venereal cases was therefore more generous. At St. Bartholomew's,[1] for instance, there were 75 beds, at Guy's 58, at the Royal Free 26, at the Middlesex 20, at the London 15, and so on. Altogether in London hospitals in 1870 there were 374 beds for venereal cases, when the population was 3,000,000. Now there are about 200 odd for 7,000,000. The hospitals were receiving no grants then. They are receiving large ones now. Further comment is unnecessary.

Dr. Graham Little's courteous letter in your issue of May 5th, p. 932, deserves careful consideration because he was the main opponent of the Edinburgh Corporation Bill which has just been thrown out. Personally I think he was wrong in opposing the second reading, because the action of Parliament has created a feeling of grievance in Scotland. If the Corporation of Glasgow persists, in spite of the fate of the Edinburgh Bill, in presenting theirs, I hope he will help to give it a chance of better ventilation. The more discussion there is on these subjects, the more the public will be educated as to their importance.

I have no ambition whatever to see any colourable imitation of the C.D. Acts of 1864–70 re-enacted in England. The working of those Acts at that time depended largely for their success on the staff of the Lock Hospital for Women, Mr. James Lane, and Mr. Gascoyne. I have still vivid memories of conversations with the late Mr. Ernest Lane in which he recounted how his uncle was publicly vituperated, how his letter-box was crammed daily with virulently abusive letters from religious fanatics who said he was making vice safe, and how the agitators for repeal mentally transferred the moral guilt attached to the diseases from the shoulders of the patients to those of the people treating them. I take off my hat to the stalwarts in Scotland prepared to face, possibly, similar treatment. I admire but do not wish to emulate.

Reference to treatment was no part of my original letter, but, as it has been raised, may I be permitted two comments. Mr. Peart has advocated vasotomy in acute gonorrhœa. I have no use whatever for this form of treatment in the acute stage. My first experience of it dates back some six years ago, when Dr. C. F. Searle, of Cambridge, sent me a patient who

[1] Acton on Prostitution, London, 1870, 2nd ed., pp. 81–83.

had been thus handled by an enterprising American surgeon. As a result the right testis became gangrenous and had to be removed. Spermatozoa also disappeared from the semen, and there was persistent prostatic neuralgia. The original gonorrhœa was cured, but the price—sterility and loss of one testicle—struck me as excessive. Even in chronic vesiculitis the procedure is not without risks. In acute disease it is, in my opinion, unjustifiable.

Finally, a word about diathermy, and the belief of Dr. Cumberbatch and Dr. Robinson, that it would solve the woman's problem. I have used this method of treatment for five years at the Hospital for Women, Harrow-road. Before doing so, I sat at the feet of Dr. Cumberbatch and Dr. Robinson for some months. I have since sent most of my house surgeons at that hospital to St. Bartholomew's, where they have been shown, most courteously, all the details of treatment. I have described the treatment in my book [2] and given it all the credit due to a definite advance. I have seen individual cases of Dr. Cumberbatch and Dr. Robinson, and confirmed the claim of cure made by them. I have had cases of my own which were brilliant successes under this treatment. And yet I have not found diathermy quite the panacea they believe it to be. Perhaps it is because I get cases that are more serious, cases complicated by such things as syphilis, or pregnancy, suburethral abscess, bartholinitis, or acute salpingitis. If diathermy always gave in cases treated by others the excellent results obtained by Dr. Cumberbatch and Dr. Robinson in their cases the cure of gonorrhœa in women would be very much simplified. But like every other form of treatment it has its failures as well as its successes. If it did away with the necessity for in-patient treatment it would be not only an incalculable boon to suffering humanity but also an enormous saving to the nation in the matter of upkeep. Unfortunately it does not do so. I only wish it did. I am, Sir, yours faithfully,

J. JOHNSTON ABRAHAM.

Harley-street, W., May 6th, 1928.

PULMONARY ATHEROMA.

To the Editor of THE LANCET.

SIR,—The leading article on this subject in your last issue possesses great interest for me, as it recalls a case bearing on this topic recorded by me in 1903, in vol. xxxvi., p. 218, of the Clinical Society's *Transactions*. A girl, aged 21, had been shown by me to the Society in 1901, as a case of congenital morbus cordis, and this view was accepted by most members who had examined the patient. The clinical features were dyspnœa, cyanosis, and attacks of cardiac pain, the latter dating from childhood. There was no clubbing of fingers, and no history of rheumatism or syphilis. The girl was very small for her age, but otherwise fairly well formed. The physical signs indicated great enlargement of the right heart. With the exception of a faint diastolic murmur occasionally audible over the pulmonary artery, where the second sound was very loud as in all areas, there were no adventitious sounds. A few months later the patient began to suffer from nausea, vomiting, and increased dyspnœa. On admission the liver was enlarged and tender, and the ankles were œdematous. Shortly afterwards the patient had a sudden fit of dyspnœa with great lividity and died in a few minutes. At the autopsy the heart weighed 17 oz., and there was great hypertrophy and dilatation of the right side. A few small granulations were seen at the cusps of the pulmonary valves, but there was no further valvular defect. The pulmonary artery showed extreme atheromatous changes in its trunk, extending down to the finest branches in the lungs. The lungs were quite healthy.

This case closely resembles those described by Drs. Coombs, Clarke, Hadfield, and Todd. But although the enlargement of the right heart was considerable, cyanosis at first was relatively slight. From the history of the symptoms going back to childhood one must conclude that the disease started during intra-uterine life. Dr. Coombs and his colleagues are inclined to attribute the pulmonary lesions to an inborn defect of the pulmonary arterial walls. I would suggest that the arterial disease is more likely to have been due to a toxic condition during fœtal life.

The part played by pregnancy in the production of toxæmic conditions affecting the mother is now well recognised, and it would not be strange if the fœtus should suffer, too, at times.

I am, Sir, yours faithfully,

PERCY KIDD.

Montagu-street, Portman-square, W., May 15th, 1928.

[2] Lectures on Gonorrhœa in Women and Children. Heinemann. 1924.

INJECTION TREATMENT OF VARICOSE VEINS.

To the Editor of THE LANCET.

SIR,—We have read with pleasure the instructive letters of correspondents in your issues of April 28th and May 5th, and in reply would make the following observations.

1. The recumbent position is a difficult one in which to insert the needle into the vein which is collapsed. If the patient stand for the insertion and then lie down, this movement may dislodge the needle from the lumen.

2. If the vein be collapsed at the time of insertion of the needle its walls may be transfixed by the needle and the subsequent injection be paravenous, a complication which all your correspondents rightly endeavour to avoid.

3. Since injections into the dilated vein are successful in practice, such contact of solution and endothelium as is necessary must in fact occur.

4. Localised digital pressure after puncture is not sufficient to prevent extravasation. An oblique entry of the needle through sound skin is also necessary. An analogy is suggested from blood transfusion practice, where little bleeding occurs after withdrawing the needle from the donor's vein, provided that an oblique entry was first made.

5. Drs. K. M. and C. J. Cellan-Jones criticise our dose of 15 c.cm. of quinine sclerosing fluid. May we point out that this figure, like that of 5 c.cm. for a single injection, represents the maximum, just as 0·5 c.cm. is the minimum. We agree that in practice the operator must feel his way, and when dealing with a patient of unknown susceptibility he must commence with one or two injections of 1 c.cm., which are later increased in the light of experience.

We believe it to be in general true that the extent of thrombosis varies directly with the amount of fluid injected, although exceptions to the rule not uncommonly occur.

We are, Sir, yours faithfully,

RODNEY MAINGOT.
C. HOPE CARLTON.

May 8th, 1928.

INJECTION FOR INTERNAL HÆMORRHOIDS.

To the Editor of THE LANCET.

SIR,—In an article dealing with this subject in your issue of March 17th Mr. A. S. Morley referred appreciatively to the work of Dr. C. E. Blanchard, the eminent proctologist of Youngstown, Ohio. It may interest your readers to know that Dr. Blanchard is visiting London early in July, and will be prepared to demonstrate his technique during his short stay here. I am, Sir, yours faithfully,

FRANK COLLIE.

Inverness Mansions, W., May 9th, 1928.

EAST END MATERNITY HOSPITAL.—The annual report records that this hospital maintains its "wonderful record of low maternal mortality," only one death having occurred among 2061 patients.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

National Health Insurance Bill.

The National Health Insurance Bill was further considered by Standing Committee C of the House of Commons on May 1st, Sir R. Sanders in the chair.

Clause 6: Separate Valuation.

The Committee resumed consideration of an amendment to Clause 6, moved by Mr. Johnston, providing that where a society without branches had been approved for more than one national area a separate valuation might be made in respect of each national area.

Sir Kingsley Wood (Parliamentary Secretary to the Ministry of Health) said that this was a very difficult and technical matter and one with regard to which he thought the Committee would be well advised to take the advice of experts who had given a good deal of consideration to it. Clause 6 gave effect to the advice of the Royal Commission and if they began to encourage a separate valuation they would have all the difficulties of transfer of a member from one country to another. The cost of separate valuations would be very great indeed.

Insurance Benefits in Northern Ireland.

Mr. Johnston said that whereas the Royal Commission's Report was dated 1926, the figures on which he had based his amendment related to 1927. In Northern Ireland to-day the doctors were paid 2*s.* 6*d.* for every certificate. To that extent there was an inducement to find ways and means of continuing this system of perpetual ill-health and disablement in Northern Ireland, whereas in England, Scotland, and Wales the doctors were paid on the basis of a capitation grant. The results were amazing. No one would argue that the real ill-health and disablement in Northern Ireland were three times worse than in England, Scotland, and Wales, and yet the figures for 1927 gave some most astounding results. Take the Prudential Society's figures. For men the sickness benefit averaged in England 16*s.* 11*d.* per member per annum, in Scotland 15*s.* 7*d.*, and in Northern Ireland 31*s* 6*d.* In regard to disablement benefit the figures for men in England were 8*s.* 9*d.* and in Scotland 9*s.*, but in Northern Ireland the amount was 16*s.* 11*d.* The disablement benefit for women in England cost 9*s.* 8*d.*, in Scotland 8*s.* 1*d.*, and in Northern Ireland 22*s.* 8*d.* per member. These figures of the Prudential Society were borne out by those of the National Amalgamated Approved Society, the Liverpool Victoria Friendly Society, the Royal Liver Friendly Society, the Royal Coöperative Society, and the City of Glasgow Friendly Society.

Mr. Chamberlain (Minister of Health): There is no dispute about the figures.

Mr. Johnston said he was glad to hear that, but what was to be done about it. He would be prepared to have words inserted providing that if the Minister was satisfied that there should be a separate valuation such a valuation should be granted. The Committee ought to take the present opportunity of speeding up greater efficiency in the health administration and medical service of Northern Ireland. Otherwise they would have members in Northern Ireland abstracting two or three times more from the funds of the approved societies than members in the rest of the country.

Dr. Vernon Davies: Will the hon. Member explain to the Committee whether he has formed any opinion as to why the figures are higher in Northern Ireland?

Mr. Johnston said that his information was that one of the reasons was the different method by which the doctors in Northern Ireland approached the question. Certain test examinations had taken place when doctors had been specially deputed to make examinations of some of these repeated beneficiaries in Northern Ireland, and it had been discovered that the people concerned ought not to be beneficiaries, and would not continue to be so if they had been medically tested by the same standards by which approved persons were tested in England, Scotland, and Wales.

Colonel Sinclair, who said he was the only member of the Committee from Northern Ireland, said that the amendment would practically compel Northern Ireland at the present time to establish an health insurance scheme of a nature similar to that which existed in Great Britain. That would be an extremely complicated business, because the dispensary system which had existed in Northern Ireland for several generations would require to be remodelled in some way to bring it into harmony with the establishment of medical benefits in England and Scotland. The Minister for Home Affairs in Northern Ireland appointed a Commission to look into the affairs of poor-law administration in Northern Ireland, and a valuable report was furnished to the Governor of Northern Ireland at the end of last year. The Cabinet had not had time to consider and draft a scheme of reform of local government services of which the dispensary system would form an integral part. He would be sorry if the adoption of this amendment more or less stampeded the Government of Northern Ireland into hasty legislation, which would again have to be remodelled when the larger question of local government services came to be considered as a whole. He freely admitted that the figures submitted by Mr. Johnston were disquieting. There was need for an endeavour to improve matters so that this startling disparity might not recur. The Minister of Labour in Northern Ireland acted for the Ministry of Health and he had adopted a medical referee system of which the health services were availing themselves freely. The certification system in Northern Ireland left something to be desired, but the medical referee system now in force would soon help to correct any alleged irregularities of certification, and he had no doubt that when the next audit was reached a very substantial difference would be recorded in the amount chargeable per person on the Insurance Fund. Northern Ireland was far too small an area to support a National Health Insurance system of its own. The difficulty was that in Northern Ireland certification only was asked from the doctor; he was not required to give treatment. Therefore it was not easy to compare the system which prevailed in Northern Ireland with that of Great Britain. The dispensary system in Northern Ireland suited admirably the large agricultural areas and was not so much availed of in the industrial areas.

Mr. Rhys Davies asked the Minister of Health whether it would be possible to negotiate with the Government of Northern Ireland to put the administration of medical benefit on the same footing as it was in England, Scotland, and Wales; and further, whether it was possible for a society to make a branch of the Northern Ireland members without the provision mentioned in Mr. Johnston's amendment.

Mr. Chamberlain said with regard to the second part of Mr. Rhys Davies's question he thought there was such a power under Section 39 of the National Health Insurance Act, 1924. As to the figures quoted by Mr. Johnston, the Committee must not only consider the proportion of the figures; they must consider the total amounts in question. He (Mr. Chamberlain) thought that the reason why no action had been taken already in this matter was that it was comparatively trivial. The Prudential Society, for example, had a membership of 1,500,000, but had only about 30,000 members in Northern Ireland. There were local difficulties in Northern Ireland which would make it almost impossible for them to make the change suggested at the moment, although he did not despair of seeing it done in the future. In view of this explanation he hoped the amendment would be withdrawn.

Mr. Broad said he hoped that the Committee would have some clearer indication than had been given that before this Bill became an Act of Parliament the Minister of Health intended to introduce such an amendment as would deal effectively with this matter and put an end to these abuses. He thought the people of Northern Ireland and those responsible as well as the medical profession ought to feel ashamed of themselves and ought to make their own propositions.

Dr. Vernon Davies said he did not think the Committee quite appreciated the peculiar psychology of the Irish people. He had never met any people who were more afraid of sickness or pain. It was quite possible that people in Northern Ireland went to a doctor far oftener than people in England. The doctors might be acting quite fairly, but in any case they would get a higher number of claims from Irish people than from the English, Scottish, or Welsh.

Mr. Meller said he would like to accentuate the views which had been expressed regarding the inadequacy of the arrangements in Northern Ireland through the absence of medical benefit. The system of certification in Northern Ireland was an incentive to people to get certificates. There was no medical service in the strict sense of the term. What he understood to be the real difficulty in Northern Ireland was that the people had no desire to get bottles of medicine, but they desired to have cash, and so long as that was obtainable there was not the slightest desire on their part to recover, nor did he think perhaps, having regard to some of the medical men he had come across in Northern Ireland, that their medicines would often shorten an illness. He hoped that discussion would bring home to the Government of Northern Ireland that something had got to be done.

The amendment was negatived by 26 votes to 12.

The Committee adjourned.

The Bill was further considered in Standing Committee on May 3rd, Sir R. Sanders in the chair.

Clause 14: Surplus Funds of Approved Societies.

On Clause 14, which deals with the disposal of surplus funds of approved societies, and lays it down that any scheme may provide for allocating out of the disposable surplus sums for donations of an eleemosynary character to hospitals and similar charitable institutions.

Sir T. DAVIES moved to include the words "or for the support of district nurses." He said he thought everyone would agree that the additional benefit which this amendment would give would be valued all over the country.

Mr. RHYS DAVIES said there would be strong opposition to the money of the approved societies being used for the purpose suggested. He could not understand hon. Members on the Conservative side of the Committee. They supported the Chancellor of the Exchequer in reducing the State grant under the Economy Act and they now came to that Committee and sought to insert amendments with the object of spending money which could not be found within the scheme at all. If they were to provide nursing treatment they would have to do it with money that ought to go direct into the pockets of the insured person.

Mr. CHAMBERLAIN said that Mr. Rhys Davies's remarks about the Economy Act were entirely irrelevant. The Government were under the impression that the words "similar charitable institutions" would cover nursing associations, but as some doubt had been raised about it he saw no reason why he should not accept the amendment.

Dr. VERNON DAVIES said he was not quite sure whether hon. Members understood the distinction between district nurses and nurses. District nurses visited patients once or twice a day only. They were very often run as charitable institutions supported by the public, and he saw no reason why approved societies should not be allowed to contribute a little towards their funds. All insured persons had a claim on the services of these nurses, whether they paid anything or not; they simply went on the recommendation of the doctor, and it was quite right that they should do so.

The amendment was agreed to.

X Ray Examinations in Cases of Fracture.

Dr. WATTS moved an amendment to provide for X ray examinations in cases of fracture, or suspected fracture. He said that the amendment was moved both in the interests of the insured person and for the protection of the panel doctor. In recent years it had become absolutely necessary in almost every case of fracture to have an X ray photograph. In several cases before the courts recently it had been held that failure on the part of a doctor to get an X ray photograph rendered him liable for an action for damages in the event of anything going wrong with the fracture. A panel doctor had no means of getting an X ray photograph unless he paid for it out of his own pocket, and with the small remuneration which he got under the Act that would be a hardship. There was a good deal of feeling among various insurance committees in different parts of the country about the necessity for this additional benefit, and he had been asked by the Cheshire Insurance Committee amongst others to bring the question forward. The cost would be trifling.

Sir KINGSLEY WOOD said he was sure that the Committee had every sympathy with the object which Dr. Watts had in view, and anything that could be done to secure proper examination in such cases as those which had been mentioned would be done provided that the finances of the societies permitted it. He was afraid, however, that this amendment could not appropriately be inserted in this particular clause, which simply gave an opportunity for societies within their disposable surplus to make occasional subscriptions to hospitals or other charitable institutions. Societies could make an additional gift to institutions making a specialty of X ray treatment, but phraseology of the kind suggested in the amendment could not be put in this part of the Bill.

Dr. VERNON DAVIES: I understand that insured patients are entitled to the best medical attendance, and that that is one of their rights under the Act.

Sir KINGSLEY WOOD: They are entitled to the attendance mentioned in the Act.

Dr. VERNON DAVIES said that insured persons were entitled to anything which came within the competence of an ordinary medical practitioner. If a doctor did not make an X ray examination he might miss the fracture altogether. If a doctor was not certain, how could he give the best skilled attention?

Sir KINGSLEY WOOD said that if the Committee desired to discuss whether this matter came within the scope of the ordinary medical practitioner or not they must deal with that point in another part of the Bill.

Dr. WATTS said that, having regard to the undertaking given by the Parliamentary Secretary to the Ministry of Health that this matter should be considered when the Committee reached the First Schedule, he would withdraw his amendment.

The amendment was by leave withdrawn.

The Administration of Additional Benefits.

Dr. VERNON DAVIES moved an amendment to the effect that "additional benefits shall be administered by the society or branch of which the persons entitled to the benefits are members, except where the benefits are in the nature of medical benefits." He said that this was apparently a simple and harmless proposition, but those who knew anything about the past history of the National Health Insurance Act knew that it was a very controversial subject. He had retired from medical practice and had not the slightest interest one way or the other in the medical profession, so that he could speak for that profession in a more or less unbiased way. Before the National Health Insurance Act of 1911 the friendly societies had formulated a scheme by which their members were enabled to get medical treatment and attendance during sickness by the payment of small subscriptions annually to the committee of the society who in turn appointed a doctor to look after these patients; that was to say, the doctor was appointed by a lay committee at, as a rule, a certain definite contract rate which was about 4s. a year. This scheme went on for years and the lay committees formed the idea that it was a perfectly reasonable the proper thing that they should be able to employ or engage medical men. When the national insurance scheme was broached the matter was brought to a head because the medical profession as a whole had formed the opinion that, being members of a learned profession, it was perhaps not conducive either to their dignity or to their position that they should be managed by a committee of lay people, particularly when it came to be a matter of medical treatment or benefit. The approved societies, on the other hand, said: "We have been working a scheme like this for some time; the doctors have been our servants: everything has worked satisfactorily, and we see no reason why under a national insurance scheme we should not be allowed to carry on in the same way." That led to a rather bitter and acrimonious fight, and the result was that the State intervened and made definite regulations by which the medical men were not put under the power or authority of the approved societies. He imagined that the approved societies had not been quite able to get over their disappointment and that there was even now perhaps a slight feeling of irritation, he might even say of veiled antagonism, to the medical profession, and they seemed to have developed the idea that that profession were simply out to protect their own interests irrespective of anything else. In his view the whole health insurance scheme rested upon a tripod of which the three legs were the State, the approved societies, and the medical men. If any of these legs was not functioning properly the whole scheme was imperilled. These three parties should be in coöperation, no one of them superior to the others, but all equal and working for the benefit of the insured person. In that way a sound foundation would be laid on which could be built up a superstructure of national health insurance which would be a benefit not only to the country, but to the insured persons themselves. Before the scheme could be competently worked they would have to come to that position. The medical profession had no desire to be superior. They desired to work with the approved societies, but they most definitely would not work under them. Subsection (5) of Section 75 of the National Health Insurance Act, 1924, was as follows:—

> "Additional benefits shall be administered by the society or branch of which the persons entitled to the benefits are members, except that where the benefits are in the nature of medical benefit, they shall be administered by and through the insurance committee."

He maintained that by that subsection the State recognised that the medical men should not in any circumstances be placed under the supervision or control of the approved societies in connexion with medical benefit. He understood that it was now proposed to delete this subsection, and that the view of the Ministry of Health was that it was either unnecessary or unworkable. That was perhaps an arguable position, but the medical profession said that this was a subsection upon which they had relied in the past to prevent the approved societies from administering benefit which was in the nature of medical benefit, and if it were necessary to put in this provision the fact that it had perhaps not worked, or was not workable, was no reason why it should be deleted if the medical profession had the idea that it was a certain safeguard for them. It would appear now as though the approved societies might be able to re-establish the position as far as regarded additional benefit of a specialist or consultant character which they thought was put an end to by the Act of 1911. It might be said that the power of the Minister to make regulations under Subsection (3) of Clause 14 meant that he would make such regulations as would ensure that the point which he (Dr. Davies) was trying to press home would be adequately safeguarded. They all knew, however, that it was not always advisable to legislate too much by

regulation. The regulations made depended absolutely on the personality of the Minister who happened to be in office.

Sir KINGSLEY WOOD: They have to go before Parliament.

Dr. DAVIES said that was so, but the Minister of Health would put the Government Whips on and get the thing through straight away. The putting of any regulation on the Table of the House was thus more or less a farce.

Sir KINGSLEY WOOD said that whatever political party might happen to be in power, if a case could be made against regulations the procedure of the House offered one of the most effective checks which could be devised.

Dr. DAVIES said he contended that the approved societies would really be put in their old position, except for the safeguard of the regulations of the Minister. The acceptance of his amendment would do the Act no harm, it would do the approved societies no harm, and it would be welcomed by the doctors as putting into the Statute something which they thought they ought to have as a safeguard.

Mr. CHAMBERLAIN said that in his endeavour to avoid the difficulties of Section 75 (5) of the existing Act, Dr. Davies was creating fresh difficulties. Section 75 (5) not only said that where the benefits were in the nature of medical benefits they were excluded from the general rule under which additional benefits were administered by the societies, but it said who was to administer benefit of the nature of medical benefit—namely, the insurance committees.

Mr. HARVEY: That is repealed in the Schedule—Subsection (5).

Mr. CHAMBERLAIN said it was repealed, and Dr. Davies wanted to restore it, but he did not restore it in the form in which it stood. He cut out the part which said how the medical benefits were to be administered in the future. Under the existing Act additional benefits in the nature of medical benefit were to be administered by the insurance committees. The hon. Member knew that that was impossible, and he had cut it out, thus leaving him in a difficulty, because he did not say who was to administer the additional benefits which were in the nature of medical benefit. In the absence of any definite instruction it would be interpreted to mean that whoever did administer them the approved societies must not have any share in the administration. Therefore he could not accept the amendment. He agreed with Dr. Davies when he said he was in favour of coöperation between the medical profession, the societies, and the Ministry of Health. If the matter was left to the Minister to provide by regulation under Clause 14(3) that would be a method by which the benefits would be administered. They would be administered by a joint body on which the medical profession and the approved societies were represented. The regulations would have to receive the tacit approval of Parliament, and he thought Dr. Davies might rely on the general good sense and fairness of Parliament, however it might be constituted in the future, to see that none of the contributing elements in this combination was put under the domination of another.

Mr. HARVEY asked if the Minister would give some assurance that it was not contemplated to make regulations that would denude the insurance committees of all their functions.

Mr. CHAMBERLAIN: No.

Mr. HARVEY: The only idea is to make provision which does not now exist for the administration of ophthalmic and dental benefits perhaps by the provision of clinics, or whatever they might be.

Mr. CHAMBERLAIN: Yes.

Dr. DAVIES said that having made his protest he could not press his amendment against the Minister.

The amendment was, by leave, withdrawn.

MINISTRY OF HEALTH VOTE.

On Tuesday, May 15th, the House of Commons went into Committee of Supply on a vote of £13,774,025 for the salaries and expenses of the Ministry of Health. Mr. J. F. HOPE, Chairman of Committees, was in the chair.

Mr. CHAMBERLAIN, Minister of Health, said the estimates showed an increase of nearly £1,000,000 over those of last year. Dealing with housing, he said that the number of slum clearance schemes submitted by local authorities, small as it was, was nevertheless the largest that had ever been before the Ministry of Health in the whole history of the slum question. The existing anomalies connected with slum areas could only be put right by amending legislation, but even if those anomalies were put right he was afraid that the process of slum clearance would be so complicated, slow, and costly that it would never present any hopeful prospect of that wholesale improvement in slum property which they must have if they were really to fulfil their moral obligations in the matter. If a proportion of the houses in the slums were improved so as to give the tenant decent conditions, there was a prospect, however, of maintaining the slum-dweller and his family in health at a rent which they could afford and in a locality where the worker could remain near to his work.

Cancer Research.

A great deal of research had been carried on in regard to cancer which was perhaps the largest single cause of mortality. That research had dealt with the causes and treatment of cancer both in this country and abroad. They had not yet been able to put their finger upon any fact, or series of facts, which would allow them to say that they had solved the problem of cancer, very far from it, but all the time they were encroaching upon the field of the unknown; all the time they were advancing their knowledge. The Ministry of Health had mapped out a sort of scientific survey of what could be done to-day in the effective treatment of cancer, taking each part of the body in turn, with the present state of skill and knowledge, and they had followed that up with a careful and exhaustive inquiry into a large number of cases of cancer and the results of that inquiry had been examined by a Departmental Committee set up at the Ministry of Health about five years ago. They had also done something to bring into prominence certain methods of treatment which they had ascertained from information derived from at home and abroad had proved particularly effective in the treatment of cancer. These were methods of radiology—the use of radium itself and so-called X ray therapy. These methods were costly and were not easily adopted by all authorities, but they believed that by proper organisation more effective use could be made of the equipment which they actually possessed. They were keeping in the closest touch with a great number of other agencies—the British Empire Cancer Campaign, the public health authorities throughout the country, and the local cancer committees working in some of the great provincial centres. While they could not say that they were even in sight of a cure or of a method of prevention of cancer, nevertheless they were on the right path, and one day—no one could say when—they might actually turn the corner and find themselves in the presence of the goal which they sought. (Cheers.)

Encephalitis Lethargica.

Encephalitis lethargica was a disease in regard to which central action was particularly necessary if they were to make progress because this disease was fortunately not sufficiently common yet for any hospitals or any private practitioners to have seen very many cases of it. During the past ten years there had been about 1500 cases a year in this country. The Ministry had instituted an exhaustive inquiry into about 3000 cases of sleepy sickness. It had been carried out by Dr. Parsons, one of the officers of the Ministry of Health and the results of the inquiry showed that only about 25 per cent. of the cases recovered; about 35 per cent. died, and the remaining 40 per cent. were more or less disabled mentally or physically. The valuable part of this inquiry was that for the first time they knew what were the proportions of the persons attacked by this disease who recovered, died, or were permanently injured. They knew the different forms of injury which sufferers from encephalitis lethargica might sustain; they knew how those things proceeded, and they had got for the first time some inkling of what were the best ways of treating the disease. The inquiry came very opportunely after the passing of the Mental Deficiency Act, because in the light of the inquiry they might hope that that Act might be put to more effective use. The inquiry disclosed a considerable variety of cases, and it must be understood that the treatment which might be effective and desirable for one case might be quite wrong for another. The Mental Deficiency Act would enable them to classify cases and treat them in the best manner. He thought that the popular impression that encephalitis lethargica was tending to decrease was correct, but of course sufficient remained to make it a very serious problem because the effects of the disease were frequently permanent, and a person once affected remained a charge upon the community, perhaps for the rest of his life.

Rheumatic Diseases.

There were really two distinct groups of diseases which come under the heading of rheumatism—acute rheumatic fever which so often attacked children and which was frequently associated with heart disease; and chronic rheumatism of the joints and muscles which frequently disabled industrial workers. Last year approved societies spent on sickness benefit and medical benefit for rheumatic insured persons £5,000,000, and in the same year 5,250,000 weeks' work were lost owing to the incidence of rheumatism among insured persons. They calculated that rheumatism accounted for one-sixth of the whole industrial invalidity of the country.

With regard to rheumatism, he was told that the treatment which afforded the best hope was one of prolonged rest in institutions, and the Ministry of Health during the past two or three years had tried to encourage the provision of hospital accommodation set apart specially for this purpose. To-day, for the first time, they had actually got from 400

to 500 beds specially ear-marked for the treatment of acute rheumatism. As regarded chronic rheumatism, the first thing required there was advice, because the causes of rheumatism were many and various, and it might, and very frequently did, spring from some local centre of infection. It might be the teeth that were wrong, or the tonsils, or the intestinal tract. He had heard, only in the last 24 hours, of a gentleman who read an account of the papers that were read at a conference held last week in Bath on the subject of rheumatism. Reading about these focal centres of infectivity, it suddenly occurred to him that possibly there might be some connexion between the rheumatic pains from which he had suffered for years and the sore-throat which had been a constant trouble to him for the same period. He went to see his doctor, who told him he had got septic tonsils, and that that was the cause of his rheumatism. That was only an illustration of how, in the absence of advice, people accepted rheumatism as though it were a sort of Act of God, which could not be prevented and for which nothing could be done; yet, under the advice of the specialist, it might be traced to some quite easily removable cause, and the suffering might be almost instantaneously relieved. Of course, a great deal was being done. In the case of the children, there was the school dental service, which employed something like 600 dentists and was treating about 1,000,000 children a year. In the case of the elder insured persons, there was the dental benefit to which approved societies were now devoting some £3,000,000 a year, with a result which he hoped would show itself in a lessened demand upon the funds in the future from rheumatism, and consequent incapacity to work. At present, approved societies were paying about £250,000 a year to two hospitals for the treatment of their patients, and a further £200,000 a year was being devoted to convalescent homes in connexion with which, in some cases, there was now being developed spa treatment. But they felt that something more than this was required, and that there were forms of treatment, especially those connected with radiant heat and light, which had shown very promising results experimentally, and which the Ministry desired to see extended for the benefit of a larger part of the population. The Red Cross Society was now trying to organise the setting-up of an experimental clinic of this kind in London, and as soon as that was ready he proposed, by regulation, to authorise approved societies to make a contribution to that clinic and to obtain treatment for their members there. The committee would realise that the full development of a preventive and curative system in connexion with rheumatism must mean the expenditure of very large sums of money. It might be that in the present financial state of the country it was not possible to carry on that development as rapidly as they would wish, but, at any rate, they were at last beginning to realise the nature of the disease with which they had to cope and to realise the extent to which it was crippling the people. As that knowledge became more widespread, he thought they would see a willingness to devote to the improvement of those conditions whatever money might be found necessary.

Maternal Mortality.

The Ministry of Health had now been established for nine years, and one might fairly say that as far as one could measure the progress of the public health by the general vital statistics, the record of the Ministry was not unsatisfactory. The general death-rate in those years had gone down from 14 per 1000 to 12·3, and the infant mortality-rate had dropped from 89 to 70 per 1000. But there was one figure which showed no improvement, although it concerned a very vital subject. That was the figure of maternal mortality. It was a terrible thing to think that to-day, out of every 250 mothers, one died in childbirth, and that that state of things had persisted for the last 20 years. That was not really the full measure of the injury that was being done. One must not only remember what happened to the family when the mother was taken away, but one must think of those other mothers who might not die, but who emerged from their confinement permanently injured in their health, their nervous system perhaps shattered, and unable really to fulfil the full duties of motherhood. He felt that the time had come when a great new effort ought to be made—(cheers)—to bring down those figures of maternal mortality and to improve the health of these mothers. There were many things they did not know yet about the causes of maternal mortality, but they did know something. They knew that these figures persisted steadily throughout the country, but, nevertheless, they were not universal. There were places where they could find much lower figures. They would be found in those cases where there was the most careful antenatal and postnatal supervision, and where the people themselves had the greatest opportunities of learning what was necessary to preserve their health and the lives of their infants. The Ministry of Health was taking up this question very seriously. Public attention has been largely directed to it through the publication of a report on the protection of motherhood drawn up by Dame Janet Campbell, a very distinguished officer of his Department. He was now endeavouring to institute a new inquiry into the causes of maternal mortality. He was trying to enlist in that service the general practitioners throughout the country, as well as the local authorities; and the British Medical Association had assured him that they were deeply interested in the question, and would use all their influence with their members to get them to give every assistance possible to his inquiry. Under this scheme, local medical officers of health would make an inquiry into every case of maternal mortality which occurred, wherever it might be, throughout the country. They would make this inquiry on lines which would be laid down by a committee at the Ministry of Health, on the lines of the Cancer Committee. Their returns would come in quarterly to that Committee, the information would be classified, and the Committee would draw what conclusions they found it possible to draw from the information obtained. All that information would then go back again to the local authorities, and would be made known to those responsible for the conduct of the infant welfare centres and the maternity hospitals. He was also setting up a committee to inquire into the whole position of midwives; into their status, training, and remuneration. After all, the success or failure of any efforts they made to improve the conditions of childbirth in the country must largely depend on the midwives, on whom a great responsibility rested. Midwifery was a hard and arduous profession; it was not a well-paid profession; and if they were to get the class of women they wanted to enter that profession—educated, humane, sympathetic, earnest, enthusiastic—they must make the conditions of the profession such as would attract the right class of people. Once again he must warn the Committee that all these efforts would cost money. Money would be needed to provide more accommodation, and for making conditions better for the people who were carrying on the health services, if they were really to make progress. If they could indicate with any confidence to the people of this country what were the precautions necessary to take if they were to remove this menace from their midst he could not believe that the national conscience would allow the lives of mothers to be sacrificed merely for the sake of a few extra thousands of pounds. (Cheers.)

An amendment to reduce the vote by £100, moved by Mr. GROVES, was rejected by 209 votes to 99—majority 110.

CHIROPODISTS (REGISTRATION) BILL.

The text of the Chiropodists (Registration) Bill, which has been introduced in the House of Lords by Viscount NOVAR, has now been published. The Bill sets up a Board to be known as the British Chiropody Board, who will be charged with admitting chiropodists to the Register to be kept under the Act, Subsection (4) of Clause 5 (which describes the persons who are entitled to be registered) provides that nothing in the section shall operate to prevent the practice of chiropody by a registered medical practitioner.

HOUSE OF COMMONS.

THURSDAY, MAY 10TH.

Government Subsidy and Housing Construction.

Dr. SALTER asked the Minister of Health whether he was aware that, following the reduction in the subsidy, there had been a marked falling off in the number of houses under construction or authorised under the 1923 and 1924 Acts; and whether, with a view to stimulating local authorities to undertake wide schemes of building for letting, he would give an early assurance that the present rates of Exchequer assistance would be available for all houses completed by Sept. 30th, 1929.—Mr. CHAMBERLAIN replied: I am aware that as compared with the abnormally high rate of house construction just before the reduction of the subsidy became operative, the subsequent statistics showed a falling-off in the rate of house-building. The latest figures indicate that the rate is now increasing again. With regard to the last part of the question, although I cannot, of course, anticipate what the result will be of the statutory review of the subsidy at present payable, which must be undertaken after Oct. 1st next, I have in the meantime decided that houses completed by March 31st, 1929, shall, if otherwise elegible, qualify for subsidy at the existing rates.

London Schools for Mentally Defective Children.

Mr. ROBERT MORRISON asked the President of the Board of Education (1) the number of London special schools for mentally defective children closed during the past five years, and (2) the number of mentally defective children at present on the roll of London special schools, and the corresponding number for 1918.—Lord E. PERCY replied: Since April 1st, 1923, 18 London special schools for mentally defective children, providing 1332 places, have been closed. The number of children on the rolls of special schools for mentally defective children has fallen from 6994 on March 31st,

1924, to 5594 on March 31st, 1928. The corresponding figure on March 31st, 1918, was 7004. I may add that the standard of ascertainment of mentally defective children in public elementary schools in London has remained practically constant for several years, and the number of children so ascertained has fallen from 12·64 per 1000 in 1923 to 11·22 per 1000 in 1927.

Publication of New Medical Discoveries.

Sir BASIL PETO asked the Minister of Health whether the General Medical Council or the Medical Research Council were concerned with the investigation of new discoveries in connexion with, and new treatments of, disease; if not, whether there was any body of medical men in this country whose business it was to make such investigation officially; and, if not, how his department was kept advised of such new discoveries and treatments.—Mr. CHAMBERLAIN replied: The answer to the first part of the question is in the negative as regards the General Medical Council, and in the affirmative as regards the Medical Research Council. The recognised method of bringing a new discovery to notice is publication of the scientific evidence for it in a technical journal. This allows its value to science or practice to be confirmed or otherwise by other workers.

Sir BASIL PETO: As the public generally do not read the technical medical papers, can the right hon. gentleman say in what way the public can be informed in view of the action which is taken by the General Medical Council in the case of any member of the profession who advises the public of a new treatment by any communication in the public press?

Viscountess ASTOR: Is it not the view of the right hon. gentleman that the less the public know, read, and think about disease the freer they will be from it?

Mr. CHAMBERLAIN: I cannot admit that it is not desirable that alleged new medical discoveries should be submitted to technical examination, and I do not think that it is possible for the Medical Research Council to take any useful action unless they have the benefit of some such publication as I have suggested.

A County Medical Officer's Appointment.

Mr. WILLIAM M. ADAMSON asked the Minister of Health what conditions had been laid down by his department in connexion with the appointment of the county medical officer for Salop; and, seeing that the Salop County Council now disputed the terms proposed, what action he proposed to take to bring about a settlement.—Mr. CHAMBERLAIN replied: No special conditions have been laid down by my department in connexion with this appointment, but I have suggested to the County Council that in making the appointment they should have regard to the standard salaries for such appointments which have been commended by my department for the guidance of local authorities. As regards the last part of the question, I am informed that the County Council have deferred consideration of the matter for the present.

MONDAY, MAY 14TH.

Administration of the Sale of Food and Drugs Acts.

Dr. VERNON DAVIES asked the Minister of Health if the Sale of Food and Drugs Act was administered by the health authorities in any county, and, if so, in how many.—Sir KINGSLEY WOOD replied: Yes, Sir. In some counties the public health committee or the medical officer of health, or both, take part in the administration of the Sale of Food and Drugs Acts. I regret that I cannot state the number of such counties.

Leprosy in Palestine.

Sir ROBERT THOMAS asked the Secretary of State for the Colonies the number of lepers in Palestine; whether they were segregated in hospitals or homes; and what other provision existed for their care and treatment.—Mr. AMERY replied: In February, 1926, it was estimated that there were less than 80 lepers in Palestine. I am not in possession of more recent figures, but the High Commissioner then informed me that the disease appeared to be dying out naturally. In 1927, the Moravian Leper Hospital at Jerusalem had on the average 29 in-patients, and 24 lepers received out-patient treatment at Government dispensaries. The High Commissioner is satisfied that sufficient facilities exist in Palestine for the treatment of leprosy.

QUEEN MARY'S HOSPITAL FOR THE EAST END.—Last week the Queen opened the Dr. Nicoll Memorial Wing of this hospital at Stratford. The additions, which comprise a solarium for sunlight treatment, large children's ward, two additional wards for men and women, an enlarged X ray department, and new administrative quarters, are in memory of the late Dr. P. Nicoll who worked earnestly and devotedly in the interests of the institution for 30 years. The Queen unveiled a tablet over a bed endowed to his memory.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At an ordinary meeting of the Council on May 10th Sir Berkeley Moynihan, the President, in the chair, diplomas of Member were conferred upon 152 candidates. Their names are included in the list of licentiates of the Royal College of Physicians, which appeared in our issue of May 5th, with the exception of A. W. D. Cooke, S. McGladdery, H. H. Mahmood, J. W. Notley, and J. M. Oldaker, who have already received the diploma of M.R.C.S., and Ralph Henry Morley, Leeds University, whose Membership was conferred at this meeting, but who will not receive his licence until a later date.

The undermentioned diploma was conferred (jointly with the Royal College of Physicians) upon the following candidates:—

DIPLOMA IN PUBLIC HEALTH.

J. S. Anand, H. S. Bawa, J. D. Bilimoria, J. C. Blake, M. Burn, L. Fay, M. M. Khan, J. M. Mackay, Elsie J. Mann, W. E. Masters, C. M. Nicol, G. H. Pringle, Winifred E. Probert, W. E. Snell, N. H. Tadiwala, F. F. Udvadia, Madeline H. J. Umpleby, and Margaret Ward.

UNIVERSITY OF LONDON.—The report of Mr. T. Franklin Sibly, D.Sc., the principal officer, on the work of the University during the year 1927–28, has been issued. The total admissions by all channels during 1927–28 amounted to 9119, as compared with 7668 in 1926. The total number of candidates for all examinations was 33,903, as against 33,220 last year. It is interesting to note that matriculation and registration candidates numbered nearly 600 more than last year, while candidates for first and higher degrees were fewer. Benefactions specially affecting the medical faculty include generous contributions from the Rockefeller Foundation, while Messrs. A. Wander, Ltd., the Imperial Chemical Industries, Ltd., and Messrs. J. Lyons and Co., Ltd., have helped towards the endowment of a Chair of Dietetics, to be attached for the present to St. Thomas's Hospital Medical School. The Trust Deed establishing the Geoffrey E. Duveen Lectureship in Otology is being varied to allow of the establishment of a Travelling Post-graduate Studentship in Oto-Rhino-Laryngology and of a fund for the promotion of research in that subject. The principal officer records changes in personnel of teachers and the institution of various new chairs and readerships. He mentions that the Holiday Course for Foreigners, the twentieth of the series, held at King's College for Women Household and Social Science Department achieved a great success. The number of applications showed a marked increase on the previous year, over 550 having to be refused. He concludes by an allusion to the fact that the University has now the land on which to build its house and that its duty and privilege will be to order that house so that it becomes to future generations their home.

Middlesex Hospital (University of London).—A course of three lectures on Graves's Disease, with lantern illustrations, will be given at the Middlesex Hospital Medical School, Cleveland-street, W., at 5.30 P.M., on Tuesday, Wednesday, and Thursday, May 29th, 30th, and 31st, by Dr. John Eason, physician to the Edinburgh Royal Infirmary.

LONDON INTER-COLLEGIATE SCHOLARSHIPS BOARD: *Medical Scholarships.*—Six medical scholarships and exhibitions, of an aggregate total value of £513, tenable at University College Hospital Medical School, the London (Royal Free Hospital) School of Medicine for Women, and the London Hospital Medical College, will be offered for competition at the examination commencing on June 26th. Full particulars and entry forms may be obtained from the Secretary of the Board, Mr. S. C. Ranner, M.A., The Medical School, King's College Hospital, Denmark Hill, London, S.E. 5.

LEBANON HOSPITAL FOR MENTAL DISEASES.—The twenty-ninth annual meeting of this hospital in Syria will take place at Friends House, Euston-road (opposite Euston Station), on Tuesday, May 22nd, at 3 P.M., Sir Wyndham Deedes, late Chief Secretary to the Palestine Government, in the chair. An address will be given by Sir Maurice Craig on the Treatment of Early Mental Disorder, and the other speakers will include Sir Robert Armstrong-Jones and Dr. Bedford Pierce. The Lebanon Hospital is the only place for the treatment of mental disorders in Syria, and is also a teaching centre for psychiatry in the Near East. It is administered on an international and undenominational basis, under a British medical director. All who are interested are invited to attend this meeting, and further particulars are obtainable from the London office, 139, Marylebone-road.

UNIVERSITY OF NOTTINGHAM.—The buildings of this new university will be opened by the King and Queen on July 10th.

THE Minister of Health has appointed Mr. A. B. Maclachlan to be a Principal Assistant Secretary and Mr. M. Heseltine, C.B., to be an Assistant Secretary of the Ministry.

THE X ray department in the new extension of the Mildmay Mission Hospital, Austin-street, Bethnal Green, will be opened by Sir Percy Shepherd to-day, Saturday, May 19th, at 3 P.M.

MINERS' ACCIDENT RATE.—The annual report of the Lancashire and Cheshire Miners' Permanent Relief Society shows that approximately one in every six of the 56,354 members was injured last year.

Dr. George H. F. Nuttall, F.R.S., Quick Professor of Biology in the University of Cambridge, has recently been elected Foreign Corresponding Member of the Academy of Medicine, Paris.

MEDICAL AND DENTAL DEFENCE UNION OF SCOTLAND.—At a recent meeting of the Council of the Union, Messrs. Millar, Thomson, and Dunlop, C.A. (113, St. Vincent-street, Glasgow, C. 2), were appointed secretaries and treasurers, and Messrs. Brown, Mair, Gemmill, and Hislop (162, St. Vincent-street, Glasgow, C. 2) law agents to the Union.

SUNSHINE IN MANCHESTER.—It is reported that the average number of hours of sunshine in Manchester during the last six years was less than 900, whereas at Southport, in the same latitude, the figure was between 1400 and 1500. At Southport this figure has remained approximately constant for 20 years, but Manchester's sunshine has diminished in the same period from 1149 to 859 hours per annum.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION. Arrangements have been made for post-graduate teaching in Glasgow from June to October, under the auspices of the above association. There will be a general medical and surgical course, special clinical courses, and clinical assistantships will be available. Copies of the syllabus for the summer session may be had from the secretary of the association, at the University, Glasgow.

A COMMITTEE appointed by the Royal Medico-Psychological Association is engaged in compiling a memorial volume to the late Sir Frederick Mott. It is hoped that it may be ready in the early autumn. The title suggested is "Contributions to Psychiatry, Neurology, and Sociology. Dedicated to Sir Frederick Mott by His Colleagues, Friends, and Former Pupils." The publication has been entrusted to Messrs. H. K. Lewis and Co., Ltd.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION.—This association has arranged a series of lectures demonstrations at St. James's Hospital, Ouseley-road, Balham, S.W. The name of the lecturer and the subject will be given each week in our Medical Diary. On Tuesday, June 12th, a visit will be paid to King Edward's Sanatorium, Midhurst, and on Wednesday, June 27th, a demonstration will be given at the Cassel Hospital for Functional Nervous Disorders, Penshurst. The Secretary is Dr. R. J. Saunders, 10, Lyford-road, Wandsworth Common, S.W. 18.

NATIONAL UNION OF SOCIETIES FOR EQUAL CITIZENSHIP.—A conference on Women in the Service of Hospitals was convened in London by the Union on May 8th and was attended by representatives of a large number of organisations. The need for adequate facilities for the training of women medical students was discussed by Dr. Graham Little, M.P., who moved a resolution protesting against the exclusion of women medical students from all the London general hospitals having training schools—with the exception of the Royal Free Hospital and a limited number of students at the University College Hospital—and calling upon the Union to organise a representative committee which could make representations on this subject to the hospitals and public bodies concerned. Miss Eleanor Rathbone, President of the Union, pointed out that the hospitals are supported by subscriptions from women as well as men. The particular need for qualified medical women in mental hospitals was argued by Dr. Isabel Wilson, and Dr. Margaret Emslie, in moving a resolution calling upon those responsible for the administration of hospitals to ensure the appointment of women both on the committees of management and to medical staff posts, referred to the special qualifications which trained medical women can bring to maternity and child welfare work.

UNIVERSITY OF GLASGOW.—On June 20th the honorary degree of Doctor of Laws will be conferred on Prof. G. W. Crile, of Cleveland, Ohio, and on Madame Curie, of Paris.

Dr. K. St. Vincent Welch, of Sydney, has been appointed as first doctor under the Australian Inland Mission's Aerial Medical Service.

ROYAL SOCIETY OF MEDICINE.—The Society's house and library will be closed on Saturday, May 26th, and Monday, May 28th.

BOLINGBROKE HOSPITAL, WANDSWORTH.—According to the annual report the average cost of an in-patient has fallen from £7 13*s.* 3*d.* to £7 6*s.* 5*d.*

EAST SUSSEX COUNTY COUNCIL.—Dr. A. G. R. Foulerton, who is shortly retiring from the position of county medical officer of health for East Sussex, was on May 8th appointed hon. consulting medical officer to the county council.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.—Examinations for the certificate in psychological medicine and for the Gaskell prize will be held at the Maudsley Hospital, Denmark Hill, London, S.E., on May 31st and June 1st. Particulars will be found in our advertisement columns.

A GIFT TO NEWCASTLE-UPON-TYNE INFIRMARY.—Sir Walter Runciman has promised to give £50,000 towards the cost of enlarging this hospital, which has a waiting-list of 2000. The extensions will cost £150,000. The buildings have been twice enlarged since 1906 and there are at present 534 beds, but these are still inadequate to the demands of a huge population.

ROYAL BERKSHIRE HOSPITAL.—Mr. J. H. Benyon, Lord Lieutenant of Berkshire, recently opened at this Reading institution new operating theatres, made necessary by the great increase in the number of operations; these have nearly quadrupled in the last 20 years. There are two theatres in a detached block connected with the main building by a covered way. Instead of the familiar plate-glass north windows they are lighted by large roof lights.

DONATIONS AND BEQUESTS.—Major Walter E. Elliot, M.P., Under Secretary of State for Scotland, on May 8th, on laying the foundation-stone of the reconstructed and enlarged Northern Infirmary at Inverness, the cost of which will be over £100,000, announced the gift to the infirmary of the sporting estate of Kintail, valued at £50,000, the benefaction of Mr. Alexander Edward, of Forres. The reconstruction is to cost £100,000, of which £74,000 has already been voluntarily subscribed.—At the recent meeting of the Glasgow University Court it was intimated that Mr. William C. Teacher, of Cove, Dumbartonshire, had made a gift of £10,000 for the foundation of a lectureship in bacteriology at Glasgow Royal Infirmary.—Sir Edward Holt, Bart., of Manchester, among other bequests, left £5000 to the Manchester Northern Hospital in memory of his son, Captain Joseph Holt, who was killed in Gallipoli, £1000 each to the Manchester Royal Infirmary, the Salford Royal Hospital, St. Mary's Hospital and Dispensary for Women and Children, Harpurley District Nursing Association, £5000 to the Manchester Radium Institute, and £1000 to the Humphrey Chetham Hospital and Library in Manchester.

ROYAL WEST SUSSEX HOSPITAL.—At the recent annual meeting the governors submitted a recommendation that out-patient letters be discontinued, and the statute amended accordingly. In support of this it was stated that these letters had been abolished at hospitals all over the country, and in some places in-patient letters as well. Against the proposal it was argued that some people would take a far greater interest in the hospital because of the letters. The governors decided that ou -patients' letters be only issued on application to the secretary. It was stated that the contributory scheme was increasing in membership at the rate of about 400 a month, and that the actual membership at the moment was 12,400, covering about 25,000 people. It was hoped that the ultimate total would be 20,000 actual members, which would produce at least £6000 a year, 90 per cent. of which would go to the hospital. The year's finances (to March 31st) showed, despite the exercise of every economy, a deficit of nearly £2000, which the governors liquidated by a decision to sell out investments or transfer from the trustees' accounts. The sum of £12,800 has so far been subscribed to the centenary fund.

ENLARGEMENT OF SWINDON HOSPITAL.—It is proposed to enlarge the Swindon and North Wilts Victoria Hospital at a cost of £33,000. A contributory scheme to help the maintenance fund is about to be launched.

VICTORIA PARK HOSPITAL.—The new block of the City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E., will be opened shortly by the Duke of Connaught, the President. It will provide especially for surgical and radiological needs. The governors are anxious to reopen the sanatorium at Saunderton, Bucks, which has been closed for two years for lack of means to maintain it.

YORK COUNTY HOSPITAL.—An extension of the eye, ear, nose and throat departments of this institution has just been opened. The beds in the eye department are increased from 16 to 24, and Dr. Peter Macdonald, the principal ophthalmic surgeon, stated that this would be the first hospital in England to be equipped with the new electrophonoidal apparatus for the treatment of chronic deafness. The hospital contains 180 beds, but Dr. Macdonald said that it serves so large a population that it requires double that number.

PLAY-READING IN AID OF A WELFARE CENTRE.—An interesting character-study of a divided personality was presented in the play "I. E. Robinson," a reading of which was given by Mr. Peter Davey, at Mitford House on May 14th in aid of a welfare centre. The initials "I. E." stand for "Impostor-Explorer," and the author, Miss B. L. Bowhay, deals sympathetically with the motives of an American chemist with a persistent exploration-phantasy, which he gratifies at the expense of truth. The play showed an intimate knowledge of life in the Southern Mississippi States and of scientific possibilities.

TRAFFIC ACCIDENTS AND HOSPITALS.—The annual report of Leicester Royal Infirmary states that last year 1169 persons injured in traffic accidents were treated, of whom 221 were admitted to the wards. With 72 exceptions these accidents were caused by motors and bicycles.—On Sunday, May 6th, accidents on the Southend arterial road were so numerous that the Victoria Hospital at Southend was unable to cope with the casualties. Many accidents were dealt with at the two dressing stations of the St. John Ambulance Association; firemen were pressed into ambulance service; and at the most congested spot five policemen, instead of one, were on point duty.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, May 21st.—8 P.M., ODONTOLOGY (at the Royal College of Surgeons, Lincoln's Inn Fields). Election of Officers and Council. Paper: Sir Frank Colyer: The Pathology of the Teeth of Elephants.

TUESDAY.—5 P.M., MEDICINE. Election of Officers and Council.

WEDNESDAY.—5 P.M., COMPARATIVE MEDICINE. Election of Officers and Council. Paper: Dr. J. P. McGowan: Aplastic Anæmia. A discussion will follow in which Dr. H. P. Bayon and Dr. A. Piney will take part.

THURSDAY.—8.30 P.M., UROLOGY. Election of Officers and Council. Paper: Mr. Clifford Morson: Observations on the Radium Treatment of Vesical Carcinoma.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, May 21st.—9 P.M., Sir Archibald Garrod: Lessons on Rare Maladies. (Annual Oration.)

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY.

WEDNESDAY, May 23rd.—5.30 P.M. (at St. John's Hospital, 49, Leicester-square, W.C.), Sir John Bland-Sutton: The Debt of Dermatology to Optical Glass. (Annual Oration.) The annual dinner will be held on the same evening at the Café Royal, 7 P.M.

NORTH-WESTERN TUBERCULOSIS SOCIETY.

THURSDAY, May 24th.—3 P.M. (at the Tuberculosis Offices, Joddrell-street, Hardman-street, Manchester), Dr. Jane Walker: Tuberculosis and Employment.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, May 21st, to SATURDAY, May 26th.—WEST END HOSPITAL FOR NERVOUS DISEASES, Gloucester Gate, Regent's Park, N.W. Clinical demonstration of the Fundus Oculi (ophthalmoscopes required) by Mr. Lindsay Rea, at the In-patient Dept., Gloucester Gate, on Fri., at 8.30 P.M.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Clinical demonstration (gynæcological) by Mr. A. C. McAllister, on Fri., at 10 A.M. The above demonstrations are free.—CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C. Intensive course—clinical and operative. Third week. Occupying all day.—NATIONAL HOSPITAL, Queen-square, W.C. Course in Neurology for two months.—MAUDSLEY HOSPITAL, Denmark Hill, S.E. Course in Psychological Medicine. Last week. Further information from the Secretary.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham.

MONDAY, May 21st.—2.30 to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throat, Nose and Ear Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M., Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M., Medical, Surgical, and Ear, Nose and Throat Clinics. Operations.

FRIDAY.—10.30 A.M., Throat, Nose and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

On Monday and Wednesday, at 2.30 P.M., there will also be demonstrations of Gynæcological and Skin Cases by Mr. Aubrey Goodwin and Dr. W. Jenkins Oliver.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith-road, W.

MONDAY, May 21st.—10 A.M., Dr. Dowling: Skin Department. 2 P.M., Mr. Addison: Surgical Wards. 2 P.M., Dr. Trevor Davies: Gynæcological Department.

TUESDAY.—10 A.M., Medical Registrar: Medical Wards. 2 P.M., Dr. Shaw: Medical Out-patients. 2 P.M., Mr. Hambien Thomas: Throat, Nose and Ear Department.

WEDNESDAY.—10 A.M., Dr. Burnford: Medical Wards. 2 P.M., Dr. Scott Pinchin: Medical Out-patients. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 2 P.M., Mr. Simmonds: Surgical Out-patients. 2 P.M., Mr. MacDonald: Genito-Urinary Department.

FRIDAY.—10 A.M., Dr. Pritchard: Medical Wards. 12 noon, Dr. Ironside: Clinical Demonstration. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Department.

SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy Department. 10 A.M., Dr. Owen: Children's Medical Out-patients.

TUESDAY and FRIDAY, May 22nd and 25th.—4.30 P.M., Special Lectures, Dr. Page: Anæsthetics.

Daily, 10 A.M. to 5 P.M., SATURDAYS, 10 A.M. to 1 P.M., In-patients, Out-patients, and Special Departments. Anæsthetic and Operative Surgery Courses.

UNIVERSITY COLLEGE, Gower-street, London, W.C.

MONDAY, May 21st.—5.30 P.M., Prof. R. G. Harrison (Yale): Modern Trends in the Study of Animal Development.

TUESDAY, May 22nd, THURSDAY, May 24th, and FRIDAY, May 25th.—Prof. L. H. Henderson (Harvard): Blood, a Study in General Physiology.

INSTITUTE OF HYGIENE, 28, Portland-place, W.

WEDNESDAY, May 23rd.—3.30 P.M., Dr. T. J. Hoskin: Rheumatic Heart Disease; Its Incidence and Prevention.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham.

WEDNESDAY, May 23rd.—4 P.M., Mr. Charles Heath: Middle-ear Disease.

ROYAL NORTHERN HOSPITAL INTENSIVE COURSE, Holloway-road, N.

MONDAY, May 21st.—2.15 P.M., Mr. L. E. Barrington-Ward: Demonstration of Surgical Cases. 3.15 P.M., Dr. Bruce Williamson: The Pneumonias in Children.

TUESDAY.—2.15 P.M., Mr. N. A. Jory: Treatment of Chronic Suppuration of Middle Ear. 3.15 P.M., Mr. J. B. Hunter: The Surgical Aspect of Goitre.

WEDNESDAY.—2.15 P.M., Mr. T. T. Higgins: Further Experience in the Treatment of Varicose Veins by Injection. 3.15 P.M., Dr. A. Lisle Punch: Fibrosis of the Lung.

THURSDAY.—2.15 P.M., Dr. W. H. McKinistry: Pathological Specimens. 3.15 P.M., Dr. P. O. Ellison: Pathological Investigations.

FRIDAY.—2.15 P.M., Dr. M. Donaldson: Displacement of the Uterus. 3.15 P.M., Dr. C. Gouldesbrough: Diagnosis of Gall-bladder Lesions by X Ray.

ST. MARY'S HOSPITAL INSTITUTE OF PATHOLOGY.

THURSDAY, May 24th.—5 P.M., Prof. R. H. A. Plimmer: Some Recent Researches on Vitamins.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, May 21st.—2 P.M., Dr. Hinds Howell: Out-patient Clinic. 3.30 P.M., Dr. Riddoch: Spastic Paraplegia (2).

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Hinds Howell: Tumours of the Spinal Cord.

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Walshe: Neurosyphilis (1).

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Mr. Elmquist: Demonstration of Re-educative Exercises (in Exercise Room).

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, May 22nd.—4.15 P.M., Dr. E. B. Leech: Some World Experiences with Gastric and Duodenal Ulcer.

UNIVERSITY OF BIRMINGHAM POST-GRADUATE LECTURES.

THURSDAY, May 24th.—4 P.M. in the Medical Lecture Theatre, Edmund-street Buildings), Dr. Malcolm Campbell: The Value of Mineral Baths in Certain Conditions of Joints and Muscles.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.

FRIDAY, May 25th.—3.30 P.M. (at the Royal Hospital), Dr. Imrie: Laboratory Aids in Diagnosis and Treatment of Gastro-intestinal Disease.

Appointments.

GOLDSMITH, WILLIAM N., M.D. Camb., M.R.C.P. Lond., has been appointed Hon. Assistant Physician to St. John's Hospital for Diseases of the Skin, Leicester-square, W.C.

WHITBOURNE, DAHLIA, M.B., B.S. Lond., Lady Medical Officer for Maternity and Child Welfare Work to the Lagos Town Council.

Certifying Surgeons under the Factory and Workshop Acts: ALDERSON, R., M.D., B.S. Durh. (Crowborough and Uckfield); BEAUMONT, F. K., M.B., Ch.B. Leeds (Finedon); CASSELL, C. W., M.D. Brux., M.B., Ch.B. Edin. (Chaddesley-Corbett, Worcester); LINZEE, N. H., L.R.C.P. Lond., M.R.C.S., D.P.H. (Kingston); and ROBERTS, H. M., L.R.C.P., L.R.C.S. Edin., L.R.F.P.S.G. (Saltcoats).

Vacancies.

For further information refer to the advertisement columns.

Birmingham and Midland Eye Hospital, Church-street.—H.S. £110.

Birmingham and Midland Homœopathic Hospital and Dispensary.—Res. H.S. £150.

Birmingham City Education Committee.—Asst. Sch. M.O. £600.

Birmingham, Selly Oak Hospital.—Cas. O. At rate of £200.

Blackburn and East Lancashire Royal Infirmary.—Fourth H.S. £130.

Bolton Infirmary Dispensary.—H.S. £150.

Brighton, New Sussex Hospital for Women and Children.—Hon. Anæsthetist.

Burnley County Borough.—Asst. M.O.H., &c. £475.

Cambridge Physiology School.—George Henry Lewes Studentship. £250.

Cambridge University Pathological Laboratory.—John Lucas Walker Studentship. £300.

Cancer Hospital, Fulham-road, S.W.—H.S. At rate of £100.

Cardiff, King Edward VII. Welsh National Memorial Assoc.—Area Asst. Tuber. P. £600.

Cardiff Royal Infirmary.—H.S., Aural H.S., and Cas. Surg. O. Each at rate of £50.

Chelsea Hospital for Women, Arthur-street, S.W.—Jun. H.S. At the rate of £100.

City of London Hospital for Diseases of Heart and Lungs.—Two H.P.'s. At rate of £100.

Colchester, Essex County Hospital.—H.P. £150.

Denbigh, North Wales Counties Mental Hospital.—Third Asst. M.O. £300.

Down County Regional Education Committee.—Sch. M.O. £750.

Durham County and Sunderland Eye Infirmary.—H.S. £450.

Durham, Holywood Hall Sanatorium, Wolsingham.—Asst. M.O. £450.

Eastbourne, Princess Alice Memorial Hospital.—Jun. H.S. At rate of £100.

East Ham County Borough.—Asst. Tuberculosis Officer (Part-time). £300.

East London Hospital for Children and Dispensary for Women.—H.P. At rate of £125.

Essex, Administrative County of.—Three Asst. County M.O.H.'s. Each £600.

Evelina Hospital for Children, Southwark, S.E.—H.P. £120.

Exminster, near Exeter, Devon Mental Hospital.—Jun. Asst. M.O. £300.

Hospital for Sick Children, Great Ormond-street, W.C.—Med. Reg. £250. Also H.P. and H.S. Each £50.

Huddersfield Royal Infirmary.—Sen. H.S. £200.

Leeds, St. James' Hospital.—H.P. and S. £200.

Manchester, Ancoats Hospital—H.S., Orthopædic. £100.

Manchester Northern Hospital for Women and Children.—Sen. H.S. and Jun. H.S. £130 and £100 respectively.

Manchester, Salford Royal Hospital.—Cas. H.S. At rate of £125.

Manor House Hospital, Golders Green, N.W.—H.S. At rate of £200.

Metropolitan Hospital, Kingsland-road, E.—Phys. to Dis. of Skin Dept.

Middlesex Hospital, W.—Surg. and Asst. Surg.

Poplar Hospital for Accidents, East India Dock-road, Poplar, E.—Second Res. O. £175.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Asst. Res. M.O. At rate of £80.

Queen's Hospital for Children, Hackney-road, E.—Phys. in charge of Skin Dept. Cas. O. Also H.S. Each at rate of £100.

Royal College of Physicians of London.—Charles Murchison Scholarship in Clin. Med. 20 guineas.

Royal Free Hospital, Gray's Inn-road, W.C.—H.S.'s, H.P.'s, &c.

Royal London Ophthalmic Hospital, City-road, E.C.—Two Out-patient Officers. Each £100.

St. Albans and Mid-Herts Hospital and Dispensary.—Res. H.S. £150.

St. Leonards-on-Sea, Buchanan Hospital.—Hon. Asst. H.S., on P. for Dis. of Chest. Also Hon. Ophth. S.

St. Mary's Hospital, W.—Surg. Reg. £200.

St. Thomas's Hospital Medical School.—University Chair of Dietetics. £1000.

Shanghai Municipal Council, Public Health Dept.—Assistant Pathologist. Taels 600 per mensem.

Sheffield Royal Hospital.—Temporary Resident. At rate of £80.

Stockport Infirmary.—Asst. Hon. Aurist to Ear, Nose and Throat Dept. Also H.S. £175.

Surrey County Sanatorium, Milford—Med. Supt. £900.

University of London, South Kensington, S.W.—Sir William Dunn Chair of Pathology. £1330.

Walsall General Hospital.—H.S. At rate of £125.

West London Hospital, Hammersmith-road, W.—H.P., H.S., Res. Asst. Cas. O. Also Aural and Ophth. H.S. Each at rate of £100.

Westminster Hospital, Broad Sanctuary, S.W.—Sen. Res. and Cas. O. At rate of £104.

Wigan Infirmary.—Third H.S. At rate of £150.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Penarth (Glamorganshire).

Births, Marriages, and Deaths.

BIRTHS.

HALLIWELL.—On May 8th, at Welbeck-street, the wife of Arthur C. Halliwell, F.R.C.S., of a son.

LIVINGSTON.—On May 9th, at Welbeck-street, the wife of Squadron-Leader P. C. Livingston, F.R.C.S.E., R.A.F., of a son.

MARRIAGES.

BENZECRY—GABRIEL.—On May 8th, at Spanish and Portuguese Synagogue, Lauderdale-road, W., Dr. J. S. Benzecry to Lillian, daughter of Mr. and Mrs. W. M. Gabriel, of Pembridge-villas, W.

DOYLE—HUTTON.—On May 10th, at St. Alban's Church, Teddington, Middlesex, Martin Redfern Doyle, M.R.C.S., L.R.C.P., to Nella, only daughter of the late Henry Hutton and Mrs. H. Hutton, of Teddington.

DEATHS.

CLARK-JONES.—On May 8th, 1928, at 1, St. Matthews-gardens, St. Leonards, Edwin Clark-Jones, M.R.C.S. Eng., L.R.C.P. Lond., aged 49 years.

GILMOUR.—On May 13th, suddenly, at his residence, Wimbledon Park, Andrew Gilmour, M.D., M.R.C.P. Edin., D.P.H., M.O.H., Wimbledon, in his 52nd year.

PRATT—On May 10th, at Fern Grove, Hainton-avenue, Grimsby, Lincs., Arthur Alfred Pratt, M.D., aged 60 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

SUNLIGHT IN MODERN MEDICINE.

In the course of a Chadwick Lecture delivered in London on May 15th, Major Walter Elliot, M.P., said that experience in England showed that the best results of treatment by ultra-violet rays were obtained in lupus, certain skin conditions, rickets, and superficial lesions in surgical tuberculosis. The general conclusions of the reports received by the Ministry of Health were that while ultra-violet light was by no means a general specific for all forms of disease, it formed a useful accessory therapeutic weapon. The Scottish verdict was somewhat more enthusiastic, and a special report by the Board of Health said that "its value in the less severe forms of non-pulmonary tuberculosis is unquestioned. In pulmonary cases the results have not been discouraging but much more work will require to be done. In child welfare work, on the whole, the results are most encouraging. They fully justify the expense and labour involved in providing this method of treatment." A clue to these differences of opinion might be found in the different amount of ultra-violet radiation recorded in the two countries. At Ventnor, Isle of Wight, the average daily readings for November and December, 1926, was 2·35. At Edinburgh the readings were nil for the whole three months between November, 1925, and March, 1926, and even in March and April the readings only averaged 1·1. A supplementary source of ultra-violet light might therefore be expected to show more obvious results in the north than in the south.

In conclusion, Major Elliot remarked that the fundamental requirements of the normal being—fresh air, fresh water, fresh food—were yet far from being met by the people of this country. Till they were fulfilled the administrator would have a part to play in the twentieth century not less important than he had in the nineteenth.

MEDICAL WOMEN'S FEDERATION.

THE annual dinner of the Medical Women's Federation, held in the Edward VII. Rooms, Hotel Victoria, London, on May 10th, and attended by more than 200 of its members, was a lively and successful occasion.

Dr. Christine Murrell, who was in the chair, made no formal speech, but succeeded in stimulating other speakers by her felicitous remarks in introducing them. The toast of "The Federation" was proposed by Sir Robert Bolam, who congratulated medical women on having seized the opportunity offered to them during the war of obtaining privileges which were rightly theirs, and on uniting to hold them for the common good. He expressed a hope that the time would come when a separate women's organisation within the British Medical Association would become unnecessary. Dr. Letitia Fairfield, who responded, believed that such a time would never come, for medical women had much to gain by standing together and acting as a unit. The Federation, which now had a membership of over 2000, included 14 local federations, and was itself a member of an international group comprising 14 countries. She solicited the aid of the Association in removing from medical women the cruel disability imposed upon them by local authorities when they committed matrimony. In general practice, she said, women were increasingly making good. Dr. Clara Stuart proposed "The Guests," who, she said, were representative of many ranks and professions. Response for the women guests was made by Mrs. E. D. Simon, sometime Lady Mayoress of Manchester, who spoke with eloquence on the wholesome effect of publicity on the position of women in public life. Women teachers in Manchester had recently achieved their right to matrimony without dismissal owing to the searching light thrown upon the controversy in the public press, and she did not doubt that proper ventilation would have a similar happy result in the problem of women's medical education which had been raised in London. Sir Walter Fletcher, who also responded, spoke of the work of women in various spheres of medical research, especially in the regions of cancer, radium, and food deficiency. He announced that pressure was now being brought upon authority to obtain a fuller supply of radium in this country. Prof. M. Lucas Keene eulogised "The Chairman" as an example of successful general practitioner and faithful pioneer of women's freedom. Apart from the guests already mentioned, there were present amongst others Lord and Lady Balfour of Burleigh, Sir Herbert Waterhouse, Major-General J. B. Smith, Mrs. Philip Snowden, Sir Gregory Foster, eminent headmistresses in the persons of Miss Lowe, M.A., Miss Tuke, M.A., and Miss Sparks, M.A., Dame Janet Campbell, Dr. Jane Walker, Dr. Catherine Chisholm, Prof. Winifred Cullis, Dr. Graham Little, M.P., Dr. James Neal, Prof. Grey Turner, and Miss Musson, R.R.C.

VACCINATION IN THE IRISH FREE STATE.

OUR Dublin correspondent writes: The division on the second reading of Mr. Everett's Vaccination Bill, a private measure intended to introduce a "conscientious objection" clause to the Irish vaccination laws, was taken last week in the Dail, and resulted in the defeat of the Bill by 75 votes to 39. There were members of every party in both division lobbies, though ten members of the Government and nearly all their supporters voted against the Bill. All the medical men in the Dail, with one exception, opposed the Bill. The exception was Dr. Ryan, one of the deputies for County Wexford, the antivaccinationist stronghold. For the past few weeks all deputies have been nearly "snowed under" by the showers of propagandist literature which reached them from London. It is satisfactory that, in spite of the active agitation in favour of the Bill, nearly a two-thirds majority of the Dail showed determination to maintain the full rigour of the existing vaccination laws. Both the President of the Executive Council and the Minister for Local Government and Public Health (Mr. Mulcahy) made strong speeches against the Bill. It may be hoped that the Department of Local Government and Public Health will be able now to insist on the existing laws being carried out.

THE CHILD'S LOG.

ALL sensible parents keep some record of their children's growth in length and weight, if not in grace. It was, we believe, the late Mr. Jonathan Hutchinson who first designed a more elaborate record which might not only be of interest to the diarists but have some anthropological value. An elaborate log-book has now been designed by Eva Viscountess Erleigh with the attraction of copious illustrations by Ernest H. Shepard. In a prefatory note Dr. Eric Pritchard vouches for the accuracy of the information given and for the soundness of the principles of mothercraft inculcated. "The Little One's Log" is published by Partridge, London, at 7*s.* 6*d.*

CHRONIC OSTEOMYELITIS IN LONG BONES.

Lieut.-Colonel H. Hallilay, I.M.S. (Rawalpindi), writes: In connexion with my article under this title in your issue of March 10th (p. 490), I have received a letter from Mr. Seton Pringle (Dublin) in which he says: "You seem to have worked out an operation almost identical to one which I described years ago in the *British Journal of Surgery*. I enclose you a reprint of this article. I have not found any reason to change my opinion or alter the technique to any extent as my experience increased." I had not read Mr. Pringle's article, and I honestly thought I had devised something new. There is, however, nothing new under the sun, an adage of which I am reminded by this incident, since Mr. Pringle's article and the operation which he describes is indeed almost identical with my own.

HYGIENE AND SANITATION IN BRITISH MALAYA.

THE Handbook of British Malaya for 1927, compiled by Mr. R. L. German, of the Malayan Civil Service, and published with official authority, is an admirable illustrated guide to the public life of the Malayan States, and to its vegetable and mineral resources. Chapter XI. sets out the organisation for the promotion of hygiene, giving the prevalence of zymotic and other disease in the various districts, classified according to the very varied racial inhabitants. The handbook, which is well indexed and contains a useful map in the back cover, may be obtained at the Malay States Information Agency, Malaya House, 57, Charing Cross, London, S.W., for 2*s.* 6*d.*

Queen's University, Ontario, has received an offer of £10,000 from a resident in Chicago to found a chair of preventive medicine and public health.

Dr. Pietro Bini, of the Hospitals of S. Chiara at Pisa, tells us that on April 28th the *Popolo d'Italia* published a note by him on the rescue of personnel from a sunk submarine. It appears that Dr. Bini has constructed a working model of an apparatus which, as soon as the submarine has been reached and the compartment containing the survivors located, enables a single diver in the space of a few minutes to put the rescue ship in a condition to provide for them pure air, electric light, telephone, food, and other necessities to preserve life. Meanwhile the inventor is awaiting an invitation to demonstrate his apparatus before a judicial committee of the National Institution of Research.

A preliminary report by the County Tuberculosis Committee in the area of the Lancashire County Council shows that the number of deaths from pulmonary tuberculosis in 1927 was 1401, a decrease in comparison with previous years, and the death-rate from this form of the disease—viz., 0·61 per 1000 of the population—is again the lowest on record. For non-pulmonary tuberculosis the death-rate of 0·16 per 1000 is the same as in 1926, and is only half what it was in 1914.